TO ALL *USERS* OF PHOTO FACT FOLDERS

(JULY 3, 1946)

● The first Set of PhotoFact Folders is just being distributed as this is written, so it is impossible to tell you of the reaction of Radio Service Engineers to this new service. We'll let you know right soon. Nevertheless, you will be interested in our own reactions, even though we are pretty close to our subject. Here goes.

1. We know that we can do much better work. We are not satisfied although we think that considering the time we have been in business (since April 1st), we haven't done so badly.

2. Our boys think that the schematics would be more readily usable if they were larger. We are experimenting with a new layout which will permit this. We hope to incorporate these larger schematics starting with Set No. 3.

3. CHANGES. Starting with an early issue, we will bring you IMPORTANT changes that manufacturers have made in usage or substitution of component parts, changes in circuits (Schematics) and in design. There are a multitude of them and they will be invaluable for you to have.

4. We have made a few minor errors. As long as we are human, that is apt to happen. As we discover them, we will tell you about them. We hope to include correction notices in Set No. 3.

5. We are in our new building—two stories—2924 East Washington Street, Indianapolis, Indiana. The phone number is Franklin 7370. You are herewith extended a cordial invitation to visit us whenever you are in town. You'll enjoy meeting our staff and seeing how we do our work. We are pretty proud of our set-up and are anxious that as many of you as possible see it.

6. Tuesday, June 18th, we talked to members of the PRSMA (Philadelphia Radio Service Mens Association). They had good, constructive criticisms to make and many of these suggestions will be incorporated in Set No. 3. But best of all, they liked what we had to show them. Here's what Dave Krantz had to say in their publication, the PRSMA NEWS:

> *"I had lunch after a conference with Howard Sams and his assistants. Howard has a new set-up for the radio service man in the way of service data. Watch for it, it has a good many possibilities . . . I believe it may be a big help to the servicing field."*

If you are a member of an Association and would like to have us present at one of your meetings to demonstrate Photofact Folders, please have your Secretary write and arrange a booking. Starting right after Labor Day (September 2nd) our meetings will begin. We urge you to get your request for a meeting in early.

7. We forgot to tell you what our numbering system means. Let's look at a PhotoFact Folder. At the bottom—right hand corner of the page, you'll read:

6-46 461-1

6—The month—June. Definite issue date, so if subsequent issues are published, the first can be withdrawn.

46—The year—1946

461—The year and the number of the set of folders

1—The number of the folder

Set Number 2 has numbers reading 462.

Simple, isn't it?

8. How often do you want us to print an index?
With every set of Folders?
Semi-annually?
Annually?

9. If you were unfortunate not to be able to buy Set No. 1, which contained a "How To Use It" folder, write and tell us. We will be glad to send a copy of "How To Use It" to you without charge. It has complete suggestions on:

(a) How to use PhotoFact Folders
(b) How to file PhotoFact Folders
(c) How to become a member of the Howard W. Sams Institute
(d) How to keep that membership active .

10. If any of the folders that you receive are imperfect in printing, send them back and we will gladly exchange them for you, without charge.

11. With each issue, we will print *"Field Experience"*—a series of Service Hints gathered from all over the country—with credit to their donor. Knowledge gained from trial by others is almost as good as one's actual experience. We hope you'll like this feature and that you will contribute whatever notes of experiences you find to be of value in the servicing of the new receivers.

12. Please tell us what radio receivers you want us to analyze first.

13. What replacement parts manufacturers do you want us to list?

14. How can we be of help to you? The door is WIDE OPEN. The WELCOME MAT is out for your use. Please come on in.

15. Please write and tell us how you like PhotoFact Folders. Tell us how you think we can improve them. Our sincere aim is to make your service work easier and more profitable to you.

INDEX FOR THIS SET OF PHOTO FACT FOLDERS IS ON OPPOSITE SIDE OF THIS SHEET

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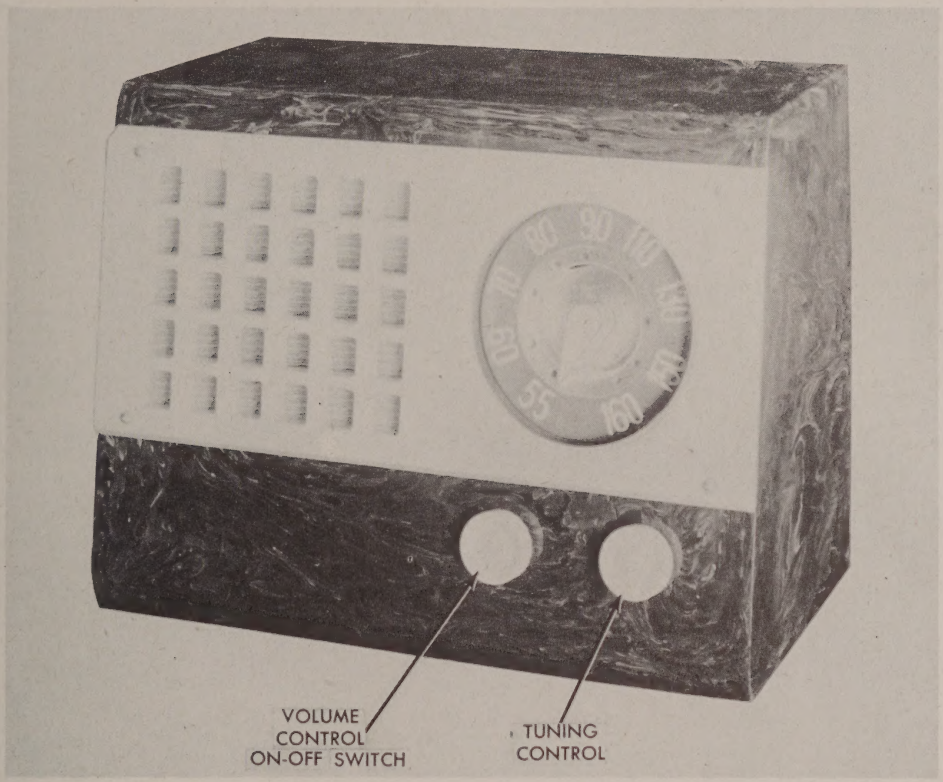
(SEE OPPOSITE SIDE OF THIS SHEET)

EMERSON
MODELS 501, 502, 504, 520
(CHASSIS 120,000, 120,029)



EMERSON MODEL 520

EMERSON
MODELS 501, 502, 504, 520
(CHASSIS 120,000, 120,029)

TRADE NAME	Emerson, Model 501, 502, 504 & 520 (Chassis 120000, 120029)
MANUFACTURER	Emerson Radio & Phono. Corp., 111 Eighth Ave., New York 11, N.Y.
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE)	Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC-DC Rating .245 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to ant. stator section of tuning gang. Low side to B-.	455KC	High freq.end of dial.(min. cap.)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and receiver B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
	Loop	1425KC	1425KC	"	A5,A6	Adjust for maximum output. Connect signal generator to loop of few turns of wire and radiate signal into receiver loop (no direct connection).
	"	600KC	600KC	"	Turn on loop.	Adjust loose outside turn on loop for maximum output.(move to either side of center) Repeat adjustments on A5 and A6 as given for maximum.

Volume control at maximum volume and output from signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	9Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6(A)	50	150	925000	2N520	DHN-2x50-150	TA-530	PRS150-40-40	BRD3515	Filter - Green
(B)	30	150							Filter - Red
7	.05	400	920030	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
8	.2	200	920050	TP429	S-4-2	TC-2	484-.2	DT4F2	Line Isolating
9	.02	400	920020	TP423	S-4-02	TC-12	484-.02	DT4S2	50L6 Plate Bypass
10	.02	400	920020	TP423	S-4-02	TC-12	484-.02	DT4S2	Audio Coupling
11	.001	600	920170	TP404	S-6-001	TC-21	684-.001	DT6D1	Audio Plate Bypass
12	.002	600	920010	TP405	S-6-002	TC-22	684-.002	DT6D2	Audio Coupling
13	.1	200	920040	TP428	S-4-1	TC-1	484-.1	DT4F1	AVC Filter
14	.002	600	920010	TP405	S-6-002	TC-22	684-.002	DT6D2	Ant. Coupling
15	220	500	910000	MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	RF Bypass Vol. Cont.

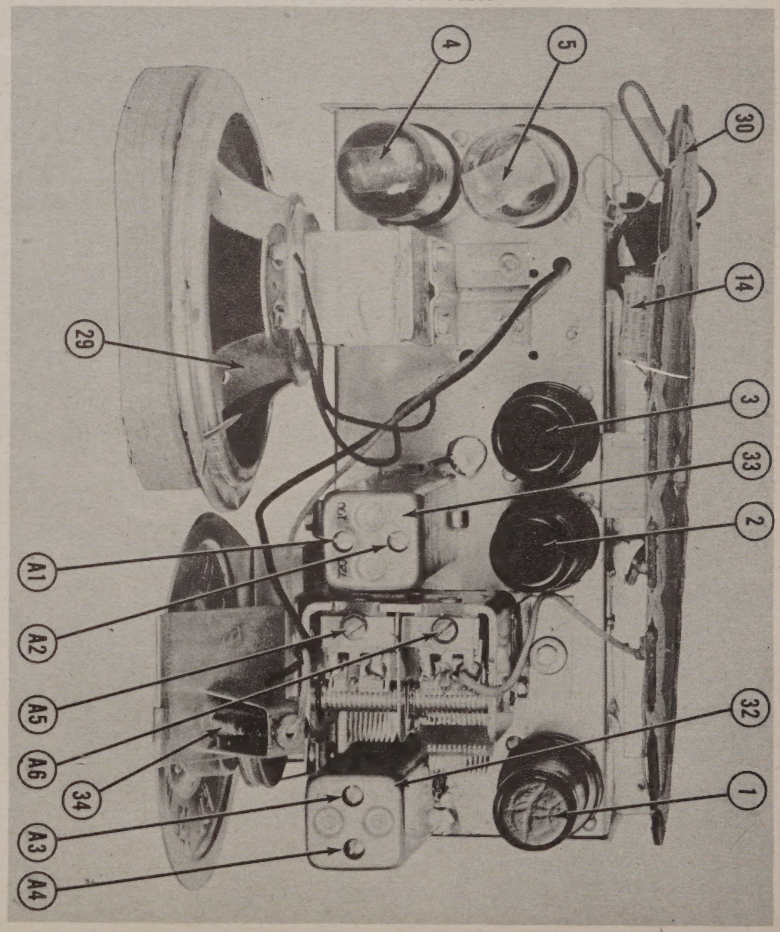
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
16(A)	500KΩ	1	390010	MK401	D11-133	AM-58-S	Volume Control
(B)	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 16A per instr.
(C)	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
17	15 Meg.	½	397000	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
18	22KΩ	½	310810	BTS-22K	Red-Red-Or. Osc. Grid
19	3.3 Meg.	½	321330	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
20	15 Meg.	½	397000	BTS-15 Meg.	Br.-Grn.-Blue 1st AF Grid
21	470KΩ	½	321130	BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
22	470KΩ	½	321130	BTS-470K	Yl.-Vi.-Yl. Output Grid
23	150Ω	½	340290	BW-½-150	Br.-Grn.-Br. Output Cathode
24	1000Ω	1	370490	BW-1-1000	Br.-Blk.-Red Filter
25	6.8Ω	½		BW-½-6.8	Blue-Gray-Gold Pilot Light Ballast
26	15Ω	1	397040	BW-1-15	Br.-Grn.-Blk. Rectifier Ballast
27	220KΩ	½	321050	BTS-220K	Red-Red-Yl. Line Isolating

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	THORDAR'N PART No.	UTAH PART No.	
	PRI.	SEC.	PRI.	SEC.					
28	2010Ω	3.2Ω	215Ω	.85Ω	734000	A3876*	T-14S82*	8775*	*Requires one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			EMERSON PART No.	JENSEN PART No.	UTAH PART No.	
29	FIELD PM	VC IMP. 3.2Ω	180000	ST-107#	5PZ#	#New mounting bracket must be fabricated.
	CONE DIA: 4-5/8"	VC DIA. 1/2"	NOT REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	EMERSON PART No.	MEISSNER PART No.	
30	Loop Ant.	0Ω	1Ω	700000		May be replaced with 700200
31	Osc. Coil	.5Ω	5.5Ω	716010	†14-1040	†Connect 50MMFD from osc. grid to coil(lug 1)
32	Input IF	28Ω	18Ω	720000	*16-6666	*Drill new mounting holes
33	Output IF	23Ω	22Ω	720100	*16-6667	" " " "

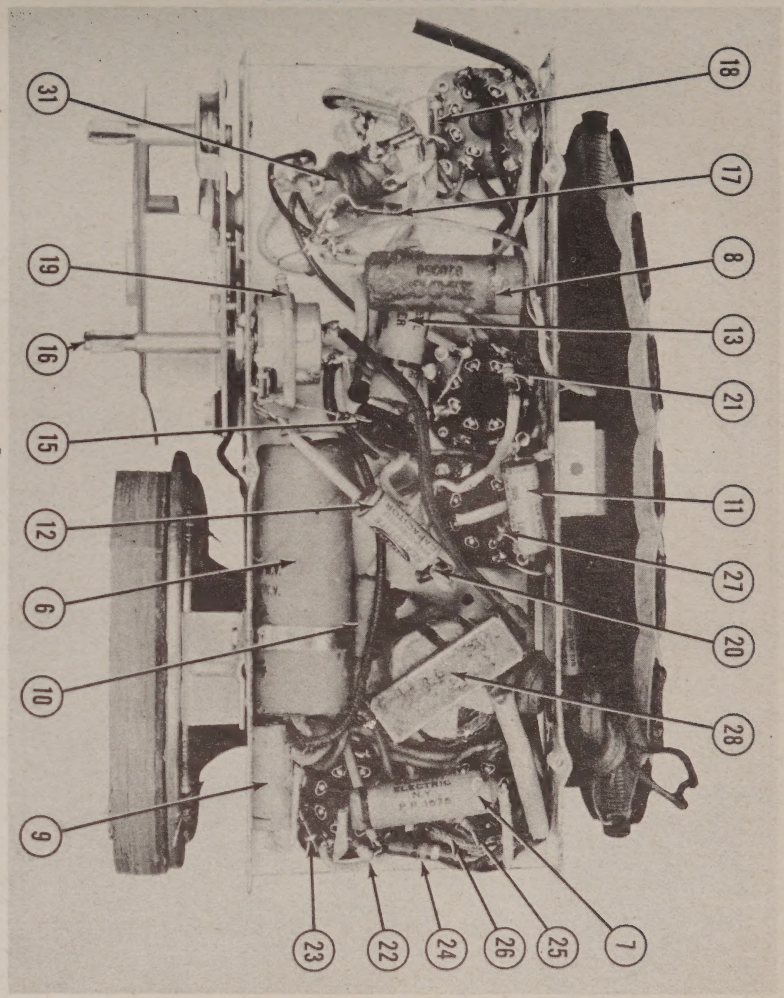
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					EMERSON PART No.		
34	Bayonet	6-8	.150	Brown	807000		Type 47

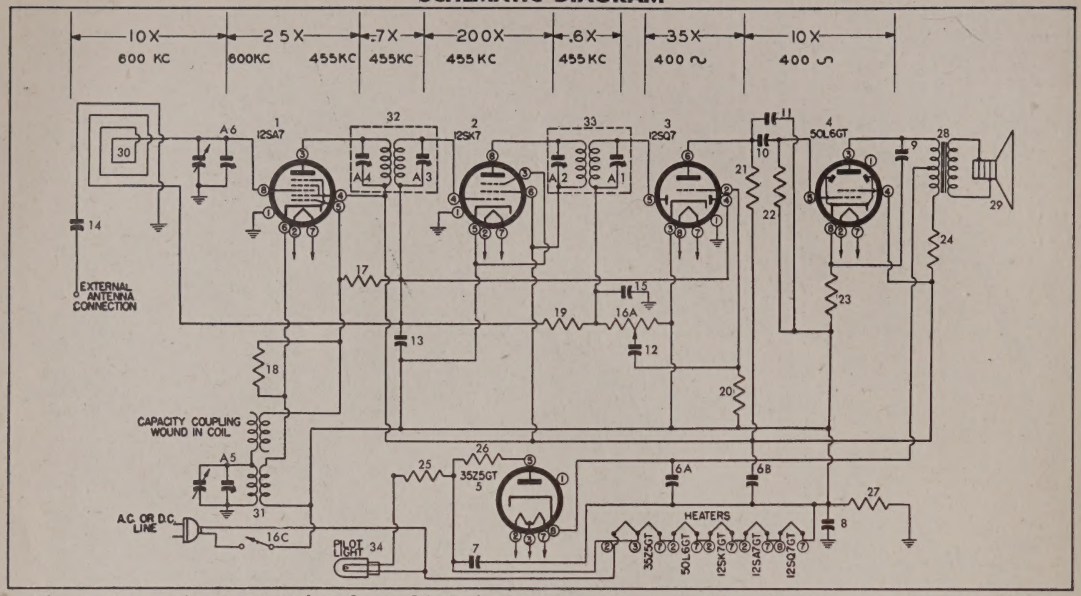
MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
A5	Trimmer		Part of Main Tuning Capacitor
A6	"		" " " "
	Tuning Cap.	900170	Two Gang Main Tuning Capacitor(Ch.120000)
	" "	900290	" " " " " " (Ch.120029)
	" "	900160	" " " " " "
	Dial Pointer	525010	Assembly
	Knob	460140	

CHASSIS—BOTTOM VIEW

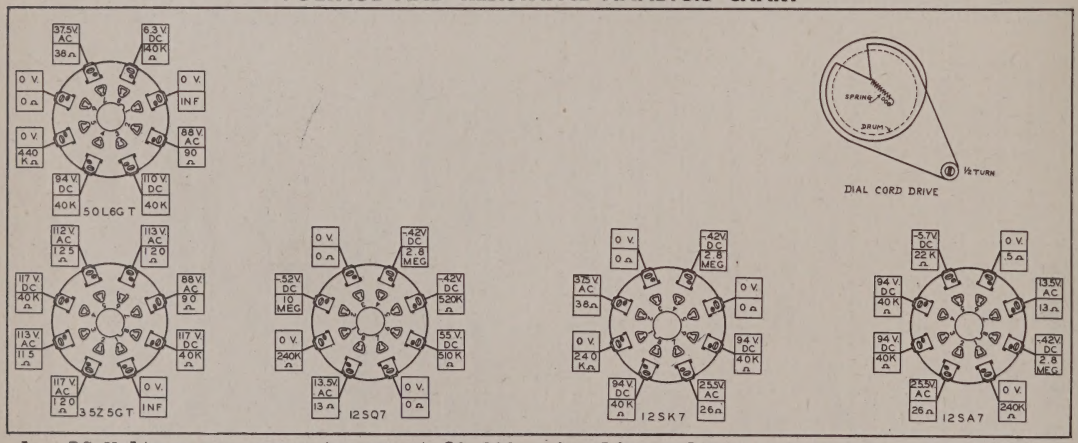


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1 - DC Voltage measurements are at 20,000 ohms per volt: AC Voltages measured at 1000 ohms per volt.

2 - Socket connections are shown as bottom views.

3 - Measured values are from socket pin to common negative.

4 - Line voltage maintained at 117 volts for voltage readings.

5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.

6 - Volume control at maximum, no signal applied for voltage measurements.

HOWARD W. SAMS & CO., INC.

2924 EAST WASHINGTON STREET • INDIANAPOLIS 6, INDIANA

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc. as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams, & Co., Inc. by the manufacturers of the particular type of replacement part listed."

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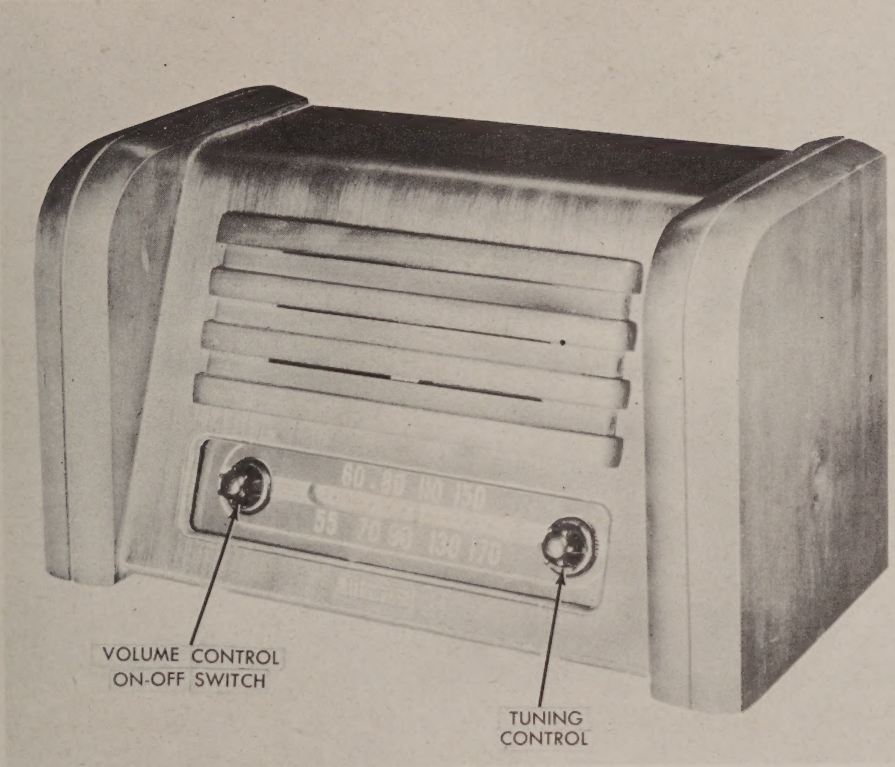
MURPHY MODEL 113



MURPHY MODEL 113

MURPHY MODEL 113

TRADE NAME	Murphy, Model 113
SUPPLIER	G. C. Murphy Co., 531 5th Ave., McKeesport, Pa.
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE)	Types 12SA7GT Converter, 12SK7GT IF Amplifier, 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	117 Volts AC-DC Rating .230 Amp. @ 117V. AC
TUNING RANGE—BROADCAST	530KC - 1700KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to ant. stator section of tuning gang. Low side to B-.	455KC	Point of no interfering signal.	Across voice coil.	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and receiver B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
200MMFD	High side to ant. (blue) lead. Low side to B-.	1500KC	1500KC	"	A5	Adjust for maximum output.
"	"	"	"	"	"	Adjust for maximum output. Check sensitivity at 600KC and repeat adjustments A5,A6 if necessary.

Volume control at maximum volume and output from signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: MURPHY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MURPHY PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6(A)	20	150		TN129	M-2x20-150	TA-220	PRS150-20-20	EZ42215	Filter - Red
(B)	20	150							Filter - Green
(C)	20	150			M-20-150	UT-201	PRS150-20		Filter - Blue
7	.05	400		TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
8(A)	.02	400		TP423	S-4-02	TC-12	484-.02	DT4S2	50L6 Plate Bypass*
(B)	.005	400		TP408	S-6-005	TC-25	484-.005	DT6D5	" " " †
9	.01	400		TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
10	.0025	400		TP406	S-6-003	TC-23	484-.003	DT6D3	" "
11	.05	400		TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
12	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolating
13(A)	.01	400		TP421	S-4-01	TC-11	484-.01	DT4S1	Ant. Coupling*
(B)	.005	400		TP408	S-6-005	TC-25	484-.005	DT6D5	" " †

*Used in later models
†used in initial production

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MURPHY PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
14(A)	500KΩ	1	5348	MR48	D13-133	M-60 Z	See Installation Note 2
(B)	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 14A per instructions
(C)	Switch		" "	M26	41	SW-A	" " " "

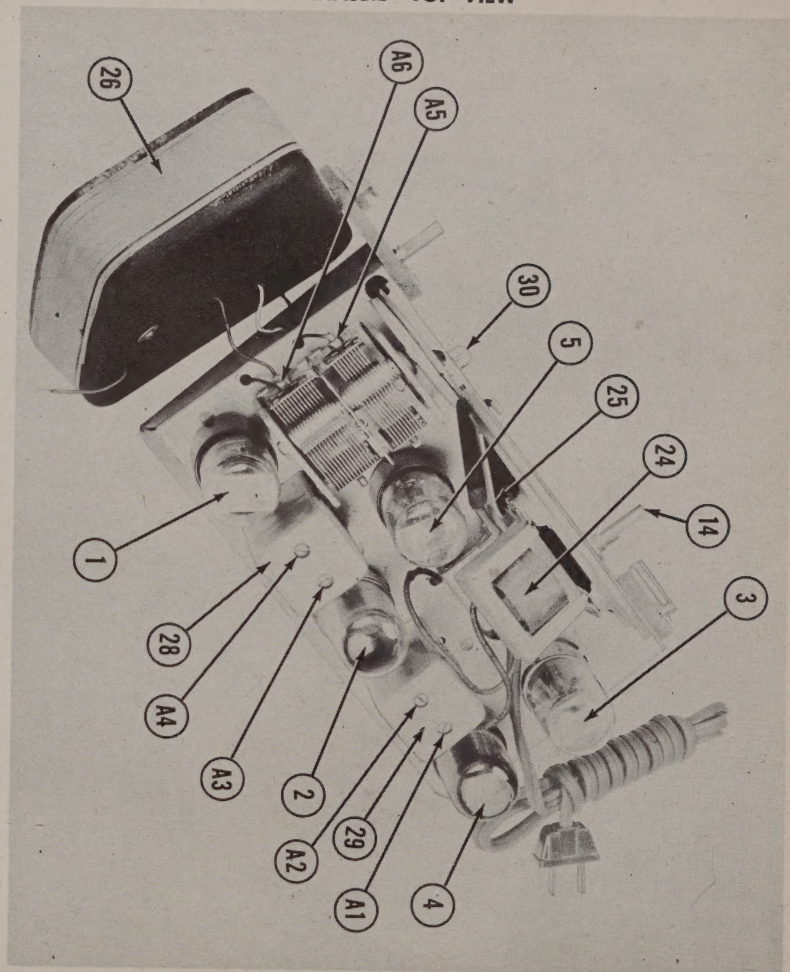
Installation Note 2 - When using Mallory, IRC or Clarostat replacements it will be necessary to install a 47KΩ resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control. (control viewed from shaft side, terminals down)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MURPHY PART No.	IRC PART No.	IDENTIFICATION CODES
15	22KΩ	½		BTS-22K	Red-Red-Or. Osc. Grid
16	2.2 Meg.	½		BTS-2.2 Meg	Red-Red-Grn. AVC Network
17	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
18	220KΩ	½		BTS-220K	Red-Red-Yl. 1st AF Plate Load
19	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
20	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
21	1500Ω	1		BW-1-1500	Br.-Grn.-Red Filter
22	150Ω	1		BW-1-150	Br.-Grn.-Br. "
23	22Ω	½		BW-½-22	Red-Red-Blk. Rectifier Ballast
24	3300Ω	½		BTS-3300	Or.-Or.-Red Audio Feedback-See Note 1
25	15Ω	½		BW-½-15	Br.-Grn.-Blk. Surge Limiting-See Note 1
26	220KΩ	½		BTS-220K	Red-Red-Yl. Line Isolating-See Note 1

Note 1 - Not used in all models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MURPHY PART No.	STANCOR PART No.	THORDAR'N PART No.	UTAH PART No.	
	PRI.	SEC.	PRI.	SEC.					
27	2350Ω	3.2Ω	179Ω	.6Ω	Part of A-SP.1	A-3876	T-1S32	8775	See Note 3
	Note 3 - When using replacement A-3876 one new mounting hole is required.								

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MURPHY PART No.	JENSEN PART No.	UTAH PART No.	
28	FIELD. PM	VC IMP. 3.2Ω	A-SP.1	ST-1051†	5PY††	††Drill holes in front of chassis and mount speaker by the lip holes.
	CONE DIA. 4-5/8"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

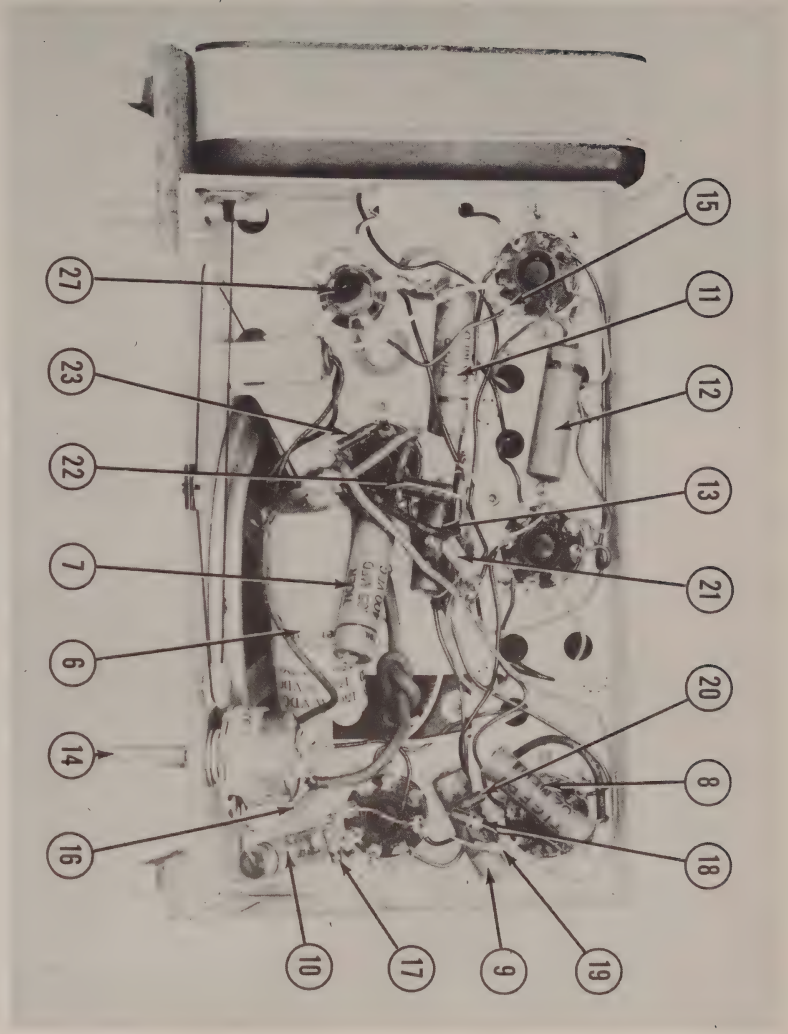
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	MURPHY PART No.	MEISSNER PART No.	
29	Loop Ant.	.2Ω	1.2Ω	A-LF-1		
30	Osc.	.5Ω	6Ω	A-LC-1	14-1040*	*Install 50MMFD between osc. grid and Lug #1.
31	Input IF	21Ω	21Ω	A-LF-1	16-6658	
32	Output IF	16Ω	16Ω	A-LF-3	16-6660#	#Install 220MMFD across volume control.

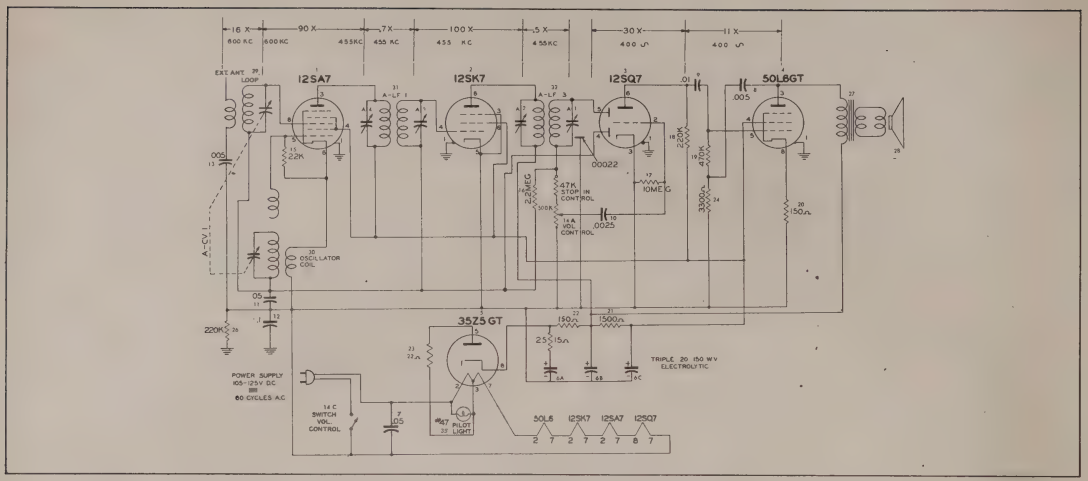
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MURPHY PART No.		
33	Bayonet	6-8	.15	Brown			Type 47

CHASSIS—BOTTOM VIEW

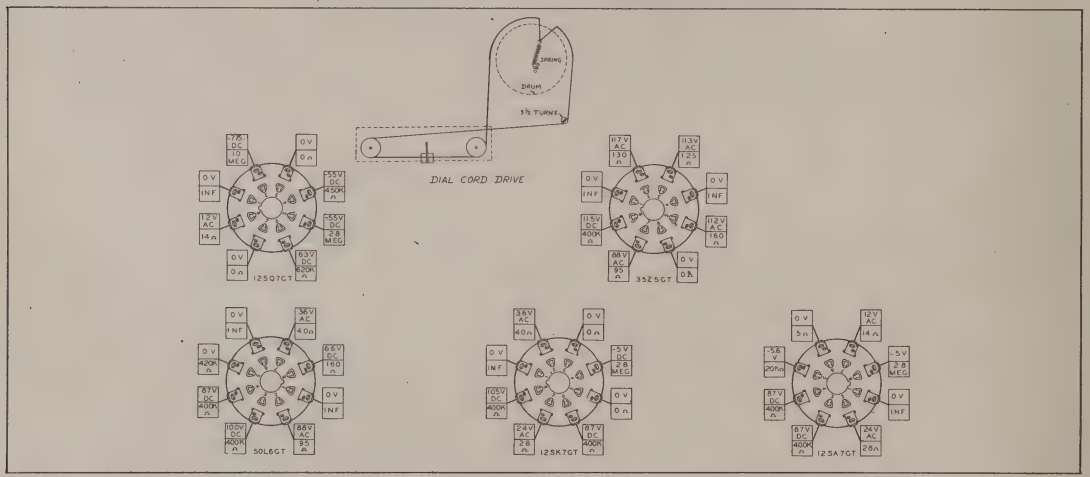


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1 - DC Voltage measurements are at 20,000 ohms per volt: AC Voltages measured at 1000 ohms per volt.

2 - Socket connections are shown as bottom views.

3 - Measured values are from socket pin to common negative.

4 - Line voltage maintained at 117 volts for voltage readings.

5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.

6 - Volume control at maximum, no signal applied for voltage measurements.

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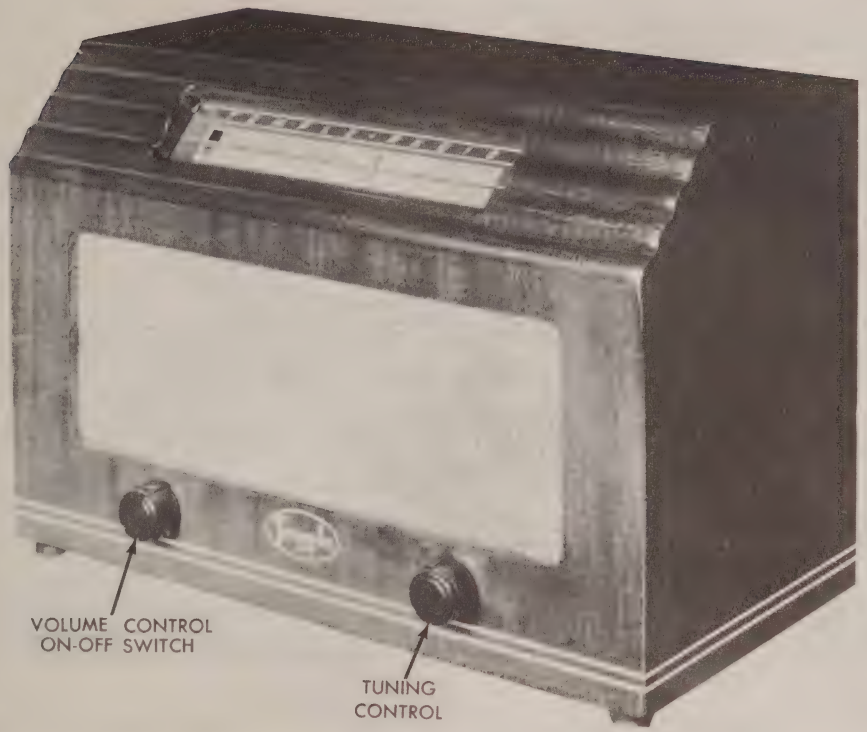
TEMPLE MODELS E-510-E-519



TEMPLE MODEL E-514

TEMPLE MODELS E-510-E-519

TRADE NAME	Temple Models E-510 through E-519
MANUFACTURER	Templetone Radio Mfg. Corp.- New London, Connecticut
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE)	Types 12SA7 Converter, 12SK7 IF Amplifier, 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	117 Volts AC-DC Rating .240 Amp. @ 117V. AC
TUNING RANGE—BROADCAST	540KC to 1700KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.01 MFD	High side to ant. stator section of tuning gang. Low side to chassis.	455KC	High end of dial.(Rotor at min. cap.)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between signal generator ground lead and receiver chassis. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
	Loop	1700KC	Pointer at extreme left. (min. cap.)	"	A5	Adjust for maximum output. Connect signal generator to loop of few turns of wire and radiate signal into receiver loop by spacing of approx. 2 feet.
	"	1550KC	Tune in 1550 KC signal.	"	A6	"

Volume control at maximum volume and output from signal generator no higher than necessary to give output reading for all adjustments. Use insulated alignment screwdriver for adjusting. There are four marks on dial backplate that may be used as check points.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: TEMPLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT	12SA7GT	6AD	
2	IF Amp.	12SK7GT	12SK7GT	6N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TEMPLE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6(A)	40	150	161.520	FP409	DY-3x40-150	EL-452	AF886D4A	UP9DJ48	▲ Filter †
(B)	40	150							■ "
(C)	40	150							▲ "
(D)	20	25		TC26	M-25-25				50L6 Cath. Bypass
6(A)	80	150		FP357	DY-3x40-150	EL-452+	AF886D4A+	UP9DJ48+	▲ Filter +
(B)	40	150							■ "
(C)	20	150							▲ "
7	30	150		TC47	M-30-150	UT-301	PRS150-30	BR3015	Filter
8	25	25		TC26	M-25-25	TA-25	PRS25-25	BR252A	50L6 Cath. Bypass +
9	.05	400	164.005	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
10	.02	600	164.003	TP412	S-6-02	TC-12	684-.02	DT6S2	50L6 Plate Bypass
11	.005	600	164.009	TP408	S-6-005	TC-25	684-.005	DT6D5	Audio Coupling
12	.005	600	164.009	TP408	S-6-005	TC-25	684-.005	DT6D5	" "
13	.05	400	164.004	TP425	S-4-05	TC-15	484-.05	DT6S5	AVC Filter
14	.005	600	164.009	TP408	S-6-005	TC-25	684-.005	DT6D5	Ant. Coupling
15	220	500	162.556	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass
16	100	500	162.522	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Vol. Cont.
17	100	500	162.522	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Diode
18	100	500	162.522	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	Osc. Grid Cond.
19	10	500	162.580	MC215	M0.5-41	MS-41	1468-.00001	5W5Q1	Fixed Trimmer

† Used in Initial Production
+ Used in Later Models. When using EL-452, AF886D4A, or UP9DJ48 disregard 20/25 section.

CONTROLS

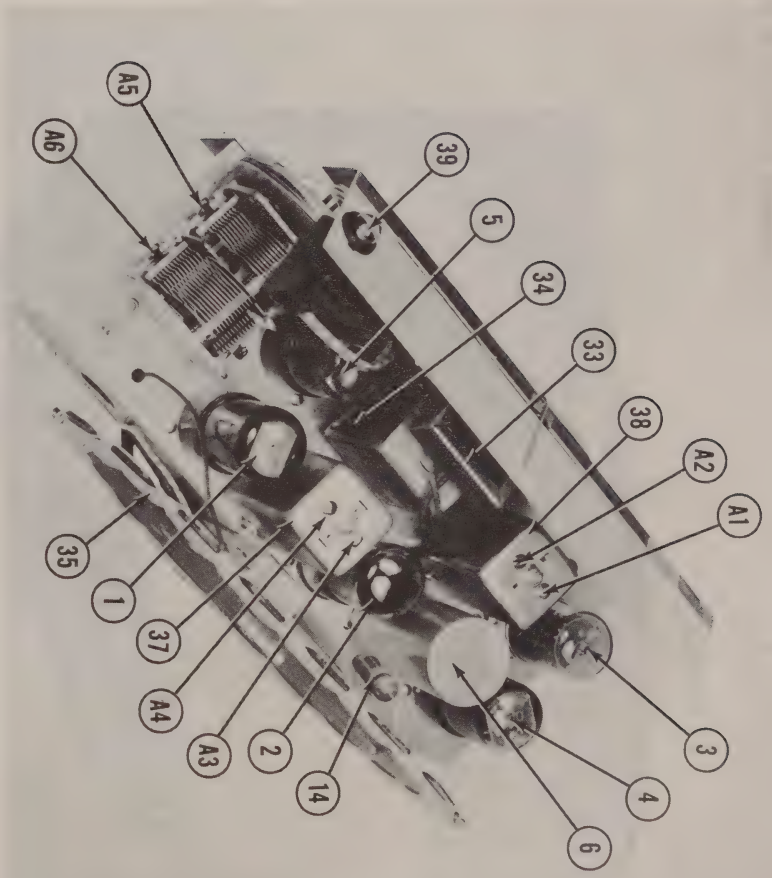
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TEMPLE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
20(A)	500KΩ	1	650.504E	MR48	DS13-133	M-60-Z	Volume Control
(B)	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 20A per instructions
(C)	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TEMPLE PART No.	IRC PART No.	IDENTIFICATION CODES
21	22KΩ	½	605.2231	BTS-22K	Red-Red-Or. Osc. Grid
22	3.3 Meg.	½		BTS-6.8 Meg#	Or.-Or.-Grn. AVC Network
23	3.3 Meg.	½			Or.-Or.-Grn. " "
24	2.2 Meg.	½	605.2251	BTS-2.2 Meg	Red-Red-Grn. " "
25	47KΩ	½	605.4731	BTS-47K	Yl.-Vi.-Or. Diode Load
26	10 Meg.	½	605.1061	BTS-10 Meg	Br.-Blk.-Blue 1st AF Grid
27	220KΩ	½	605.2241	BTS-220K	Red-Red-Yl. 1st AF Plate Load
28	470KΩ	½	605.4741	BTS-470K	Yl.-Vi.-Yl. Output Grid
29	150Ω	1	601.1511	BW-1-150	Br.-Grn.-Br.Output Cathode
30	1200Ω	2		BW-2-1200	Br.-Red-Red Filter
31	120Ω	1		BW-1-120	Br.-Red-br. "
32	47Ω	1		BW-1-47	Yl.-Vi.-Blk. Rect. Ballast-See Note 1

#The IRC Part No. BTS-6.8 Meg. replaces both original 3.3 Meg. Resistors.
Note 1 - Used in some models only.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TEMPLE PART No.	STANCOR PART No.	THORDAR'N PART No.	UTAH PART No.	
	PRI.	SEC.	PRI.	SEC.					
33	1860Ω	3.29Ω	153Ω	.58Ω	851.514	A-3876*	T-14382	8775	*One new mounting hole required.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TEMPLE PART No.	JENSEN PART No.	UTAH PART No.	
	FIELD	VC IMP.				
34	PM	3.29Ω	780.006	ST-106	5PZ	
	CONE DIA.	VC DIA.				
	4-5/8"	1/2"	NOT READILY	REPLACEABLE-USE COMPLETE SPEAKER UNIT.		

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	TEMPLE PART No.	MEISSNER PART No.	
35	Loop Ant.	0Ω	1Ω	251.145		
36	Osc.	.5Ω	4.5Ω	251.143	14-1040	
37	Input IF	15Ω	15Ω	251.146	16-6658	
38	Output IF	15Ω	17Ω	251.147	16-6660	

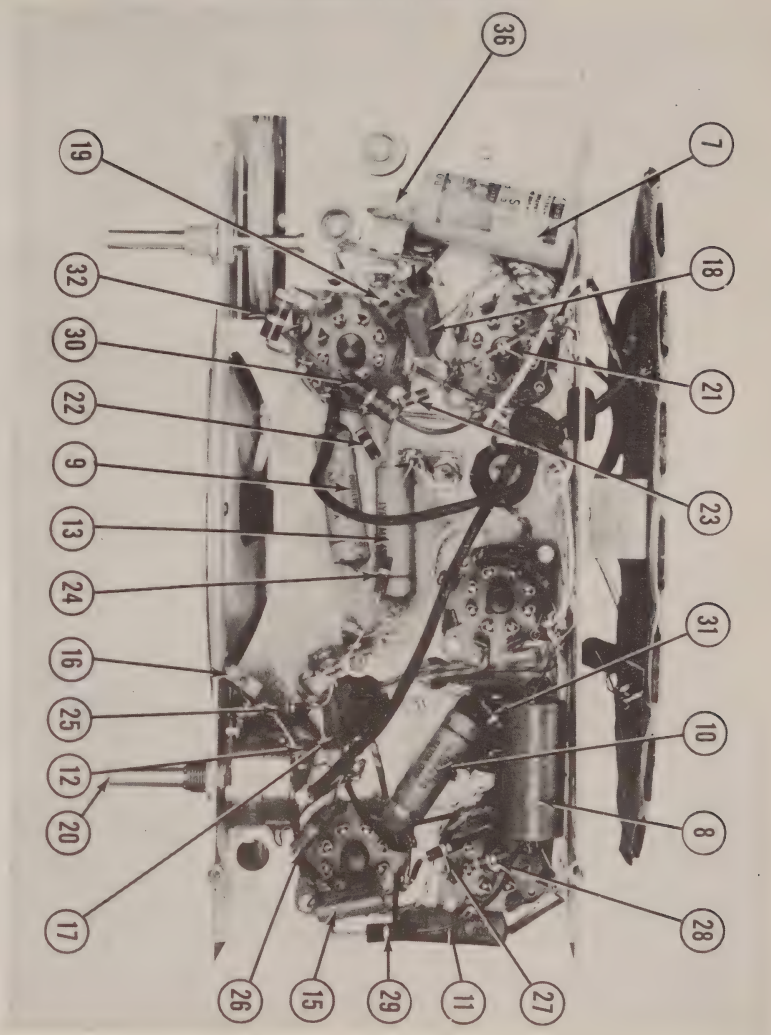
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					TEMPLE PART No.		
39	Bayonet	6-8	0.2	White	51		51

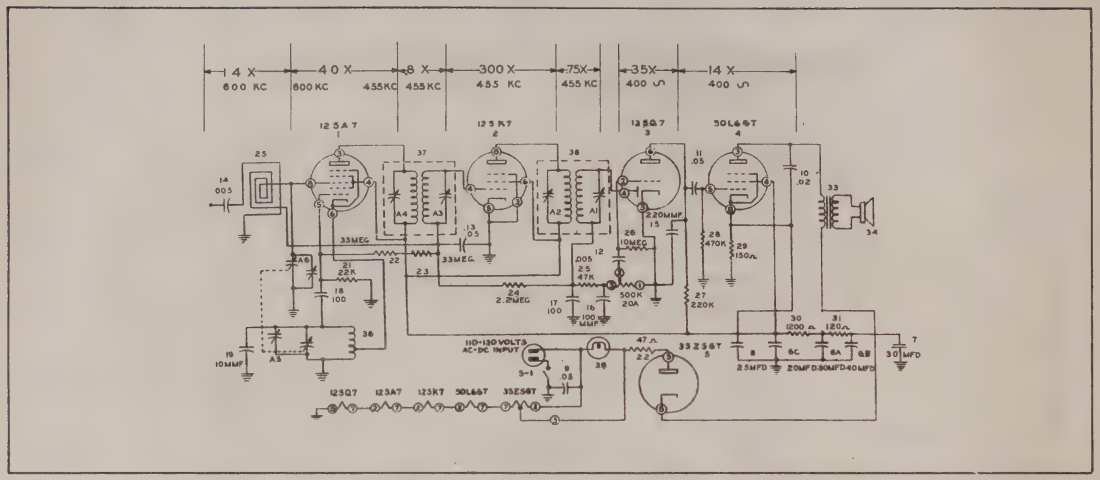
MISCELLANEOUS

ITEM No.	PART NAME	TEMPLE PART No.	NOTES
A5	Trimmer		Oscillator-Part of 165.513
A6	Trimmer		Antenna-Part of 165.513
	Tun. Cap.	165.513	2 Gang variable tuning capacitor
	Dial Scale	311.003	

CHASSIS—BOTTOM VIEW

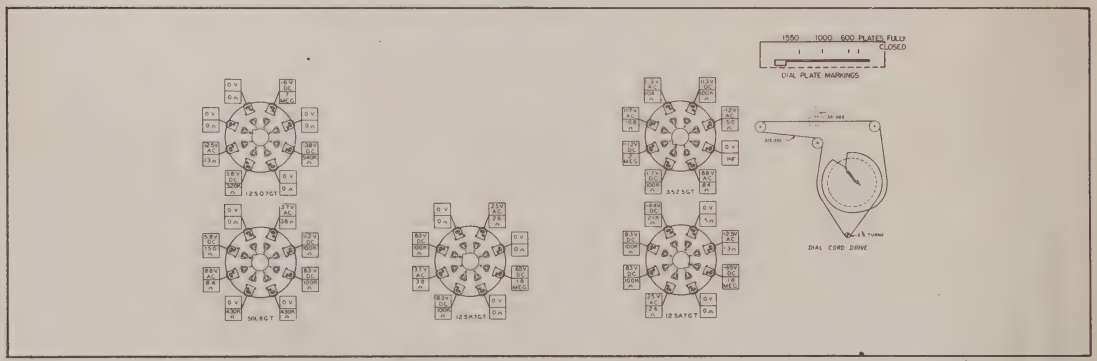


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1 - DC Voltage measurements are at 20,000 ohms per volt: AC Voltages measured at 1000 ohms per volt.

2 - Socket connections are shown as bottom views.

3 - Measured values are from socket pin to common negative.

4 - Line voltage maintained at 117 volts for voltage readings.

5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.

6 - Volume control at maximum, no signal applied for voltage measurements.

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MECK MODEL PM-5C5-DW10

MECK (TRAIL BLAZER) MODEL PM-5C5-DW10

TRADE NAME	Meck (Trail Blazer), Model PM-5C5-DW10
MANUFACTURER	John Meck Industries, Plymouth, Indiana
TYPE SET	AC Superheterodyne - Self Contained Loop Antenna - Record Player
TUBES (FIVE)	Types (Lock-In Models) 14Q7 Converter, 14A7/12B7 IF Amp., 14B6 Det.-AVC-AF, 50A5 Power Output, 35Y4 Rectifier. (Octal Models)12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	117 Volts AC Rating .255 Amp. @ 117 Volts AC (Radio Only)
TUNING RANGE—BROADCAST	550KC - 1600KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA *	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to ant. stator section of tuning gang. Low side to chassis.	455KC	High freq. end of dial. (min. cap.)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and receiver chassis. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
	Loop	1600KC	1600KC	"	A5	Adjust for maximum output. Connect signal generator output to loop of few turns of wire and radiate signal into receiver loop (no direct connection)
	"	1400KC	Tune in 1400 KC signal.	"	A6	"

Volume control at maximum volume and output from signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		MECK PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7GT	12SA7GT	8AD	Octal Type
		14Q7	14Q7	8AL	Lock-In "
2	IF Amp.	12SK7GT	12SK7GT	8N	Octal "
		14A7/12B7	14A7/12B7	8V	Lock-In "
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	Octal "
		14B6	14B6	8W	Lock-In "
4	Power Output	50L6GT	50L6GT	7AC	Octal "
		50A5	50A5	6AA	Lock-In "
5	Rectifier	35Z5GT	35Z5GT	6AD	Octal "
		35Y4	35Y4	5AL	Lock-In "

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MECK PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
6(A)	20	150	CL-10001	TN129	DHN-2x20-150	TA-220	PRS150-20-20	EZ42215	Filter - Red
(B)	20	150							" - Blue
(C)	20	150			DH-20-150	UT-201	PRS150-20		" - Yellow
7	.05	400	CP-14503	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
8	.05	400	CP-14503	TP426	S-4-05	TC-15	484-.05	DT4S5	50A5 Plate Bypass
9	.01	400	CP-14103	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
10	.01	200	CP-12103	TP421	S-4-01	TC-11	484-.01	DT4S1	" "
11	.05	200	CP-12503	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
12	250	500	CM-15251	MC240	M0.5-325	1FM-325	1468-.00025	5WST25	Audio Plate Bypass
13	250	500	CM-15251	MC240	M0.5-325	1FM-325	1468-.00025	5WST25	RF Bypass Diode
14	50	500	CM-15500	MC225	M0.5-45	1FM-45	1468-.00005	5WSQ5	Osc. Grid Cond.

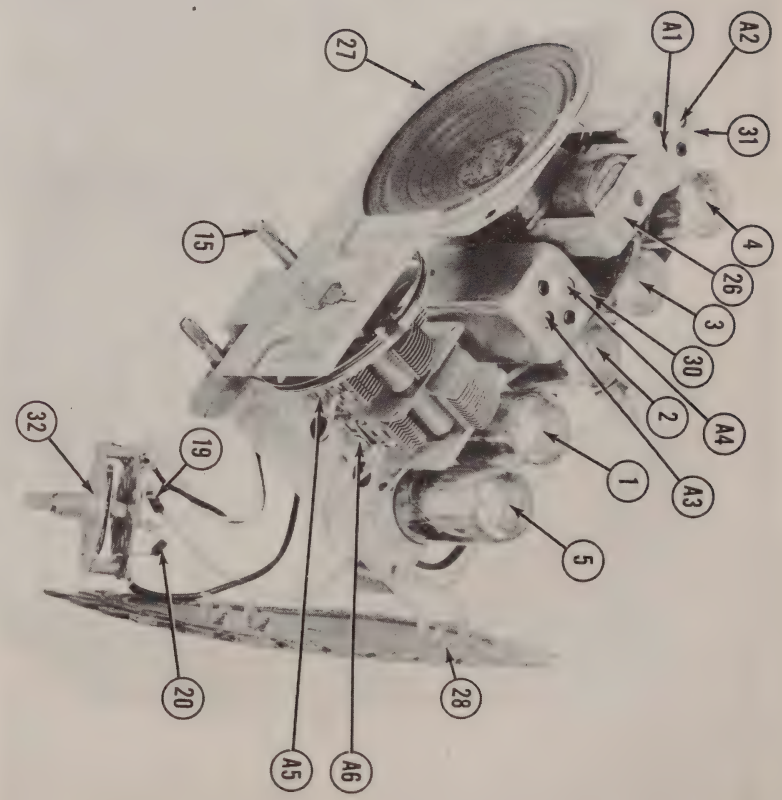
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	MECK PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
15(A)	1 Meg.	1	VC-10105	MK402	D13-137	AM-63-Z	Volume Control
(B)	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 15A per instructions
			" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MECK PART No.	IRC PART No.	
16	20KΩ	½	RC-32002	BTS-20K	Red-Blk.-Or. Osc. Grid
17	2 Meg.	½	RC-32004	BTS-2 Meg.	Red-Blk.-Grn. AVC Network
18	10 Meg.	½	RC-31005	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
19	750KΩ	½	RC-37503	BTS-750K	Vi.-Grn.-Yl. Phono Load
20	1 Meg.	½	RC-31004	BTS-1 Meg.	Br.-Blk.-Grn. Phono Series
21	250KΩ	½	RC-32503	BTS-250K	Red-Grn.-Yl. 1st AF Plate Load
22	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
23	150Ω	½	RC-31500	BW-½-150	Br.-Grn.-Br. " Cathode
24	1000Ω	1		BW-1-1000	Br.-Grn.-Red Filter
25	200Ω	1		BW-1-200	Red-Blk.-Br. "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PART No.	STANCOR PART No.	THORDAR'N PART No.	UTAH PART No.	
	PRI.	SEC.	PRI.	SEC.					
26	2100Ω	3.2Ω	188Ω	.9Ω	TO-10000	A3876*	T-14S82*	8775*	*Bend mounting tabs down and mount by original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MECK PART No.	JENSEN PART No.	UTAH PART No.	
27	FIELD	VC IMP.	SR-10000	ST-113	4PY	
	PM	3.2Ω				
	CONE DIA.	VC DIA.	NOT READILY REPLACEABLE-USE COMPLETE UNIT.			
	3-15/16"	1/2"				

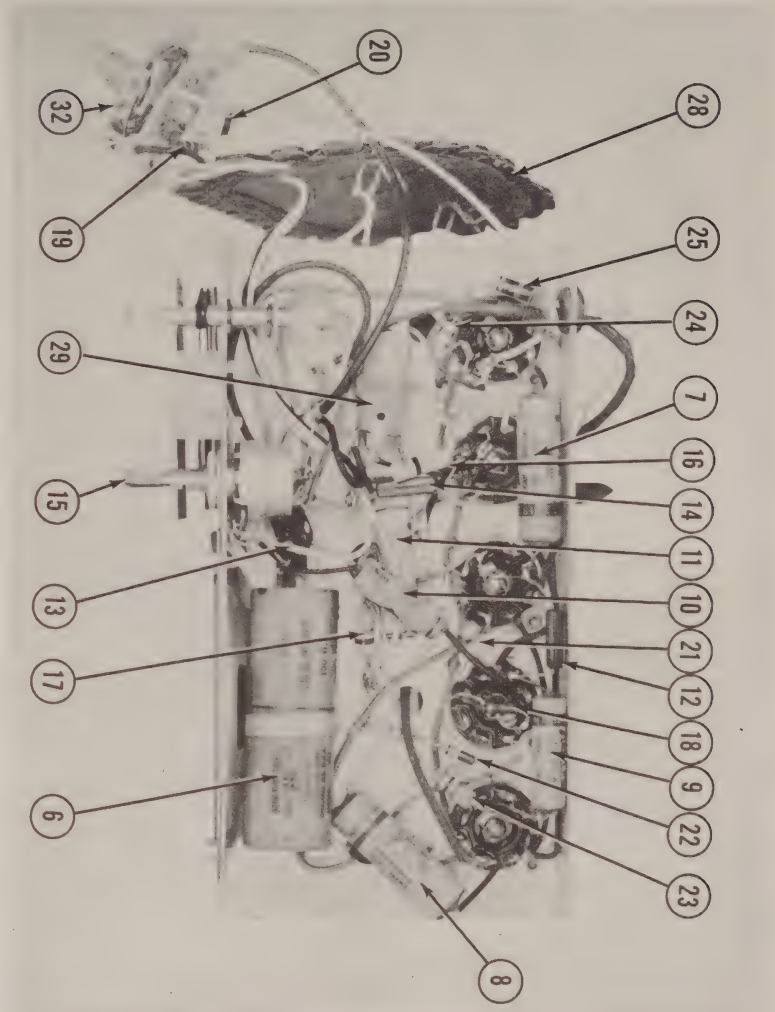
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	MECK PART No.	MEISSNER PART No.	
28	Loop Ant.	.1Ω	1.3Ω	AL-10003		
29	Osc. Coil	.5Ω	3.3Ω	TRC-10000-D	14-1040	
30	Input IF	24Ω	22.5Ω	TS-10000	16-6658	
31	Output IF	24Ω	22.5Ω	TS-10001	16-6660	

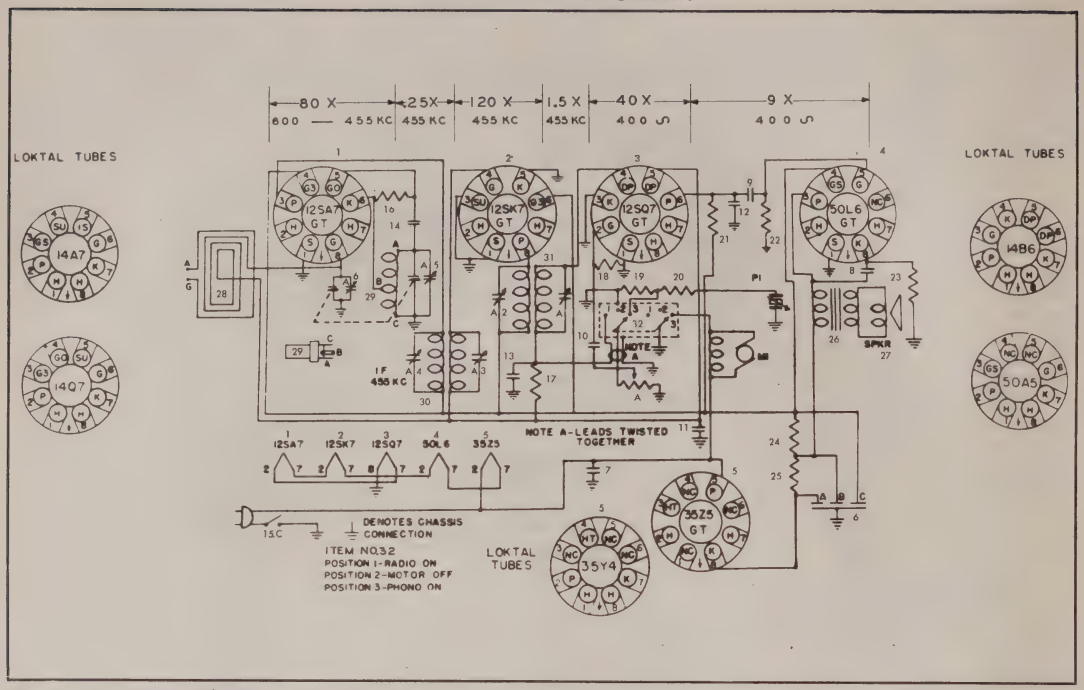
MISCELLANEOUS

ITEM No.	PART NAME	MECK PART No.	NOTES
A5	Trimmer		Part of variable tuning cap. (CV-10002-D)
A6	"		" " " " "
	Tuning Cap.	CV-10002-D	2 gang variable capacitor
32	Switch	VS-10000	Radio-Phono, double pole-three position
	Arm	PA-10000	Crystal pickup arm
	Phono Motor	PRS-10000	Single record

CHASSIS—BOTTOM VIEW

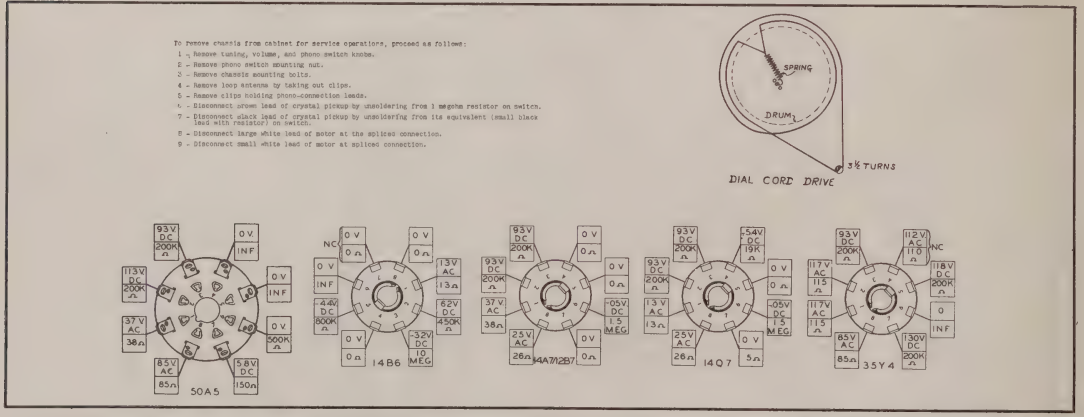


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for average operative stages, rather than absolute values. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3 volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART


To remove chassis from cabinet for service operations, proceed as follows:
1 - Remove tuning, volume, and phono switch knobs.
2 - Remove phono switch mounting nut.
3 - Remove chassis mounting bolts.
4 - Remove loop antenna by taking out clips.
5 - Remove clips holding phono-connection leads.
6 - Disconnect brown lead of crystal pickup by unsoldering from 1 megohm resistor on switch.
7 - Disconnect black lead of crystal pickup by unsoldering from its equivalent (small black lead with resistor) on switch.
8 - Disconnect large white lead of motor at the spliced connection.
9 - Disconnect small white lead of motor at spliced connection.
SPRING
DRUM
3½ TURNS
DIAL CORD DRIVE
50A5
14B6
14A7/12B7
14Q7
35Y4

1. DC voltage measurements are at 20,000 ohms per volt; AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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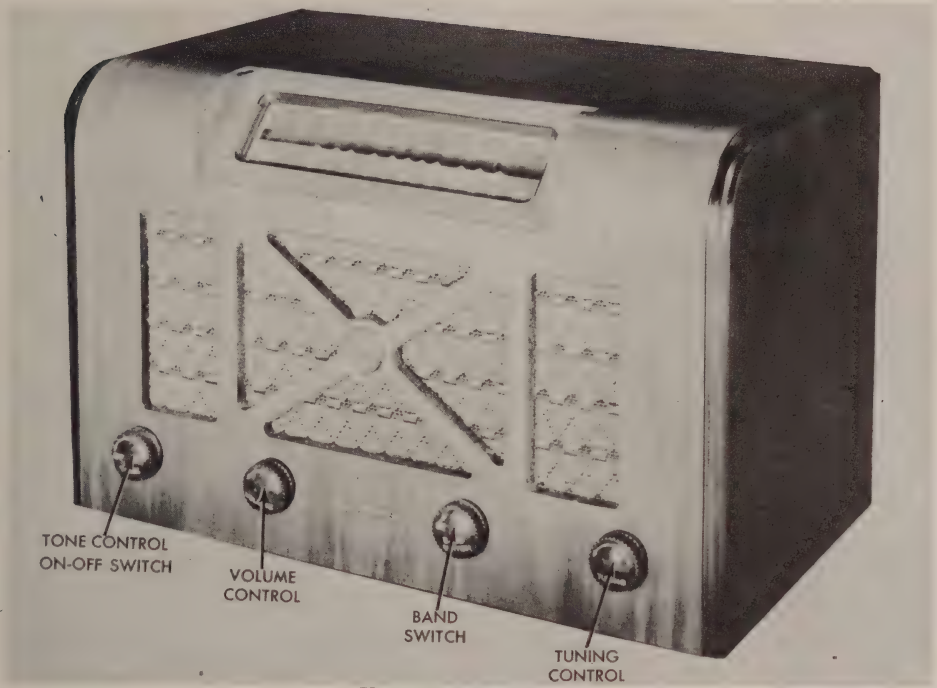
TRAV-LER MODELS 5010, 5011, 5012



TRAV-LER MODEL 5010

TRAV-LER MODELS 5010, 5011, 5012

TRADE NAME	Trav-Ler, Models 5010, 5011, 5012 (Chassis 105)
MANUFACTURER	Trav-Ler Karenola Radio & Tele. Corp. - 571 West Jackson - Chicago, Illinois
TYPE SET	AC-DC 2 Band Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types 12SK7GT RF Amp., 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-125 Volts AC-DC Rating .235 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	520-1730KC SHORT WAVE 5.4 - 18.3MC

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to ant. stator section of tuning gang. Low side to gang frame.	455KC	BC	Any point of no interfering signal.	Across voice coil	A1,A2 A3,A4	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and gang frame. Also decrease dummy antenna to .001 MFD to prevent excessive hum modulation.
"	"	1730KC	"	High freq. end of dial. (Min. Cap.)	"	A5	"
200MMFD	High side to ant. lead (blue). Low side to gang frame	1400KC	"	Tune in 1400 KC signal.	"	A6	Adjust for maximum output.
"	"	600KC	"	Tune in 600 KC signal.	"	A7	Rock gang and adjust for maximum output. Recheck at 1730KC for setting of A5.
400Ω res.	"	18.3MC	SW	High freq. end of dial. (min. cap.)	"	A8	Adjust for maximum output. To make sure this is fundamental turn receiver to approx. 17.3MC and a much weaker signal should be heard. This is the image freq.
"	"	16MC	"	Tune in 16MC signal.	"	A9	Adjust for maximum output. Advisable to rock gang slowly while adjusting.
"	"	6MC	"	Tune in 6MC signal.	"		This is a check and no adjustment should be necessary as fixed pad is used.

Volume control at maximum volume and output from signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: TRAV-LER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7GT	12SK7GT	8N	
2	Converter	12SA7GT	12SA7GT	8AD	
3	IF Amp.	12SK7GT	12SK7GT	8N	
4	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRAV-LER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7(A)	40	150	EC-4	FF357	DY-3x40-150	EL-340	AF888D	UP6CJ44	■ Filter
(B)	40	150							▲ "
(C)	40	150							"
8	.05	400	PC-5	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
9	.05	400	PC-5	TP426	S-4-05	TC-15	484-.05	DT4S5	Tone Control
10	.01	400	PC-7	TP421	S-4-01	TC-11	484-.01	DT4S1	35L6 Plate Bypass
11	.01	400	PC-7	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
12	.01	400	PC-7	TP421	S-4-01	TC-11	484-.01	DT4S1	" "
13	.1	400	PC-8	TP428	S-4-1	TC-1	484-.1	DT4P1	IF Screen Bypass
14	.1	400	PC-8	TP428	S-4-1	TC-1	484-.1	DT4P1	RF " "
15	.05	400	PC-5	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
16	.25	400	PC-9	TP430	S-4-25	TC-2	484-.25	DT4P25	Line Isolating
17	.01	400	PC-7	TP421	S-4-01	TC-11	484-.01	DT4S1	Ant. Coupling
18	.05	400	PC-5	TP426	S-4-05	TC-15	484-.05	DT4S5	RF Bypass Rect.
19	220	500	MC-3	MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass
20	100	500	MC-2	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Diode
21	50	500	MC-4	MCB225	MOS.5-45	MS-45	1469-.00005	5R5Q5	Osc. Grid Cond.
22	4750	300	MC-1						S.W. Fixed Pad*
23	220	500	MC-3	MC240	MO.5-325	1FM-325	1468-.00025	5W5T25	RF Coupling

*Should be replaced with exact value. A .005 MFD capacitor may be used with some sacrifice of sensitivity and calibration.

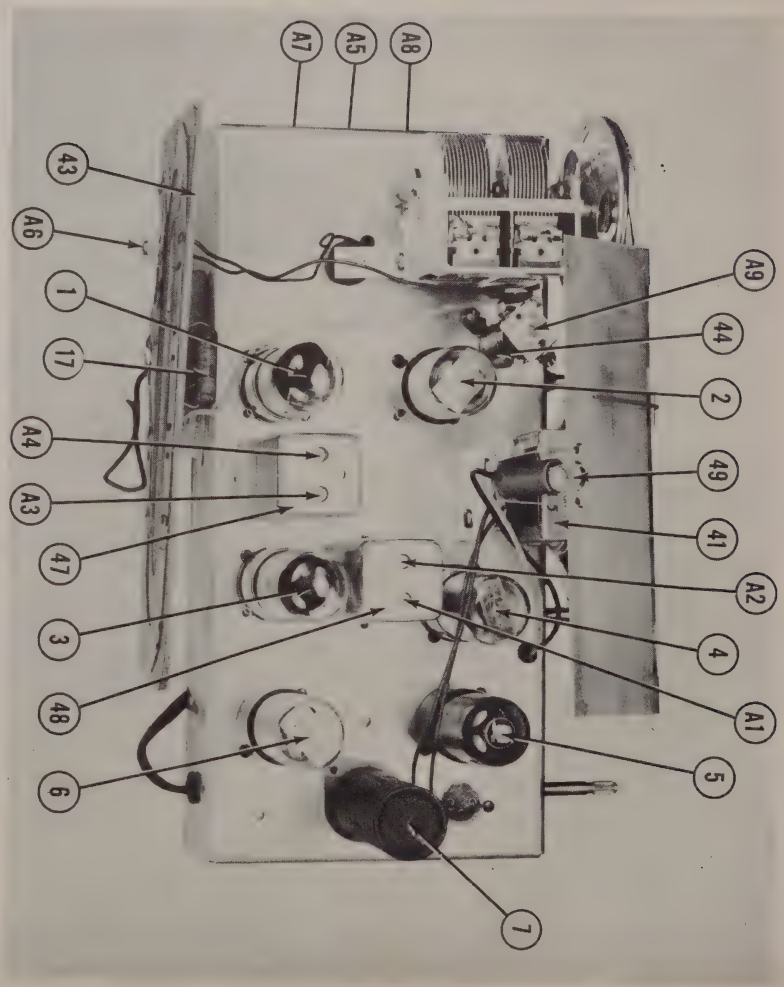
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
24(A)	1 Meg.	1	VC-3	MK402	D13-137	AM-63-Z	Volume Control
(B)	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 24A per instructions
25(A)	25K	1	VC-1	UM129	D11-120	AM-40-S	Tone control
(B)	Shaft		Not Req.	SS25	E	KSS-3	Attach to 25A per instructions
(C)	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	IRC PART No.	IDENTIFICATION CODES
26	3900Ω	½	IR-22	BTS-3900	Or.-White-Red RF Plate Load
27	22KΩ	½	IR-8	BTS-22K	Red-Red-Or. Screen Dropping
28	47KΩ	½	IR-10	BTS-47K	Yl.-Vi.-Or. Converter Grid
29	22KΩ	½	IR-9	BTS-22K	Red-Red-Or. Osc. Grid
30	1000Ω	½	IR-24	BTS-1000	Br.-Blk.-Red Plate Filter
31	4 Meg.	½	IR-23	BTS-3.9 Meg	Yl.-Blk.-Grn. AVC Network
32	47K	½	IR-10	BTS-47K	Yl.-Vi.-Or. Diode Load
33	2 Meg.	½	IR-13	BTS-2.2 Meg	Red-Blk.-Grn. 1st AF Grid
34	500KΩ	½	IR-11	BTS-470K	Grn.-Blk.-Yl. 1st AF Plate Load
35	240Ω	½	IR-5	BW-½-220	Red-Yl.-Br. Output Cathode
36	500KΩ	½	IR-11	BTS-470K	Grn.-Blk.-Yl. Output Grid
37	330Ω	½	IR-21	BW-1-330	Or.-Or.-Br. Filter
38	220Ω	½	IR-5	BW-1-220	Red-Red-Br. "
39	39Ω	½	IR-17	BW-½-39	Or.-White-Blk. Rectifier Ballast
40	470Ω	½	IR-6	BTS-470	Yl.-Vi.-Br. Mixer Cathode

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRAV-LER PART No.	STANCOR PART No.	THORDAR'N PART No.	UTAH PART No.	
	PRI.	SEC.	PRI.	SEC.					
41	2040Ω	2.8Ω	149Ω	.59Ω	Part of SPK-4	A3876†	T-14S82†	8775†	†Bend mounting tabs down and mount by original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TRAV-LER PART No.	JENSEN PART No.	UTAH PART No.	
42	FIELD PM	VC IMP. 2.8Ω	SPK-4	ST-105‡	SPY‡	‡Cut speaker so as to clear volume control shaft. Drill and tap magnet frame or fabricate new mounting bracket.
	CONE DIA. 4-5/16"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	TRAV-LER PART No.	MEISSNER PART No.	
43	Loop Ant.	0Ω	1Ω	LL-2		
44	SW Ant.Coil	.1Ω	.3Ω	LA-2	14-1044	
45	BC Osc.Coil	1Ω	5.5Ω	LO-3	14-1040	
46	SW Osc.Coil	0Ω	0Ω	LO-4	14-1048	
47	Input IF	6Ω	6.5Ω	LI-1	16-1658	
48	Output IF	6Ω	6.5Ω	LI-2	16-1660	

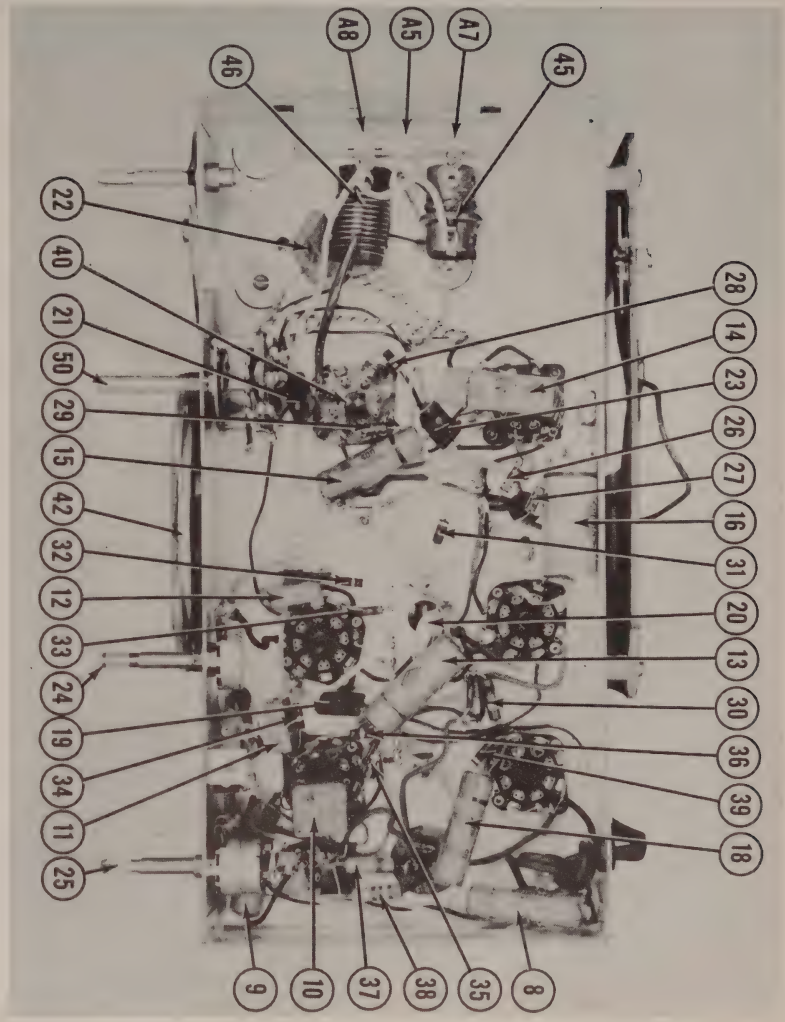
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					TRAV-LER PART No.		
49	Bayonet	6-8	.15	Brown	PB-1		Type 47

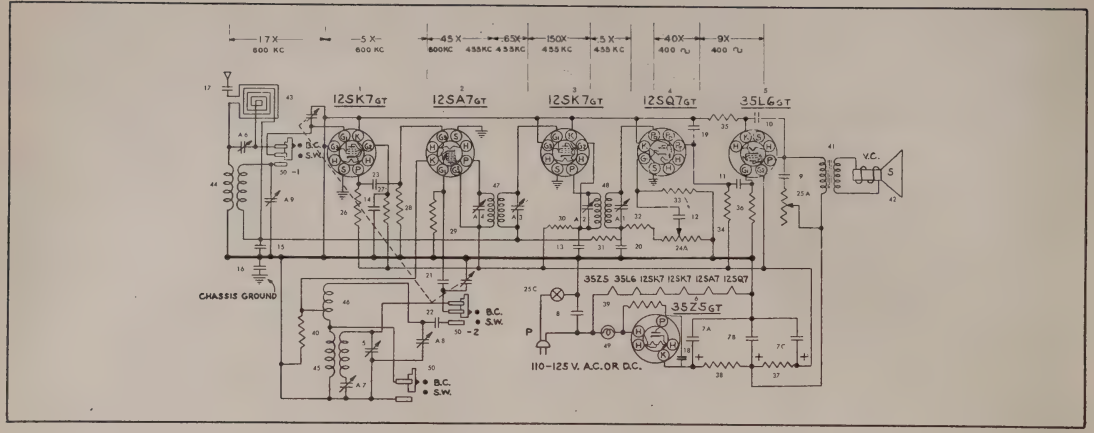
MISCELLANEOUS

ITEM No.	PART NAME	TRAV-LER PART No.	NOTES
50	Band Switch	SW.-1	
A5	Trimmer	TC-1	Oscillator - Broadcast
A6	"	TC-7	Antenna - Broadcast
A7	"		600KC Osc. Padder (Part of TC-1)
A8	"		Short Wave Osc. (Part of TC-1)
A9	"	TC-8	" " Antenna
	Tuning Cap.	GC-1	2 gang variable tuning capacitor

CHASSIS—BOTTOM VIEW

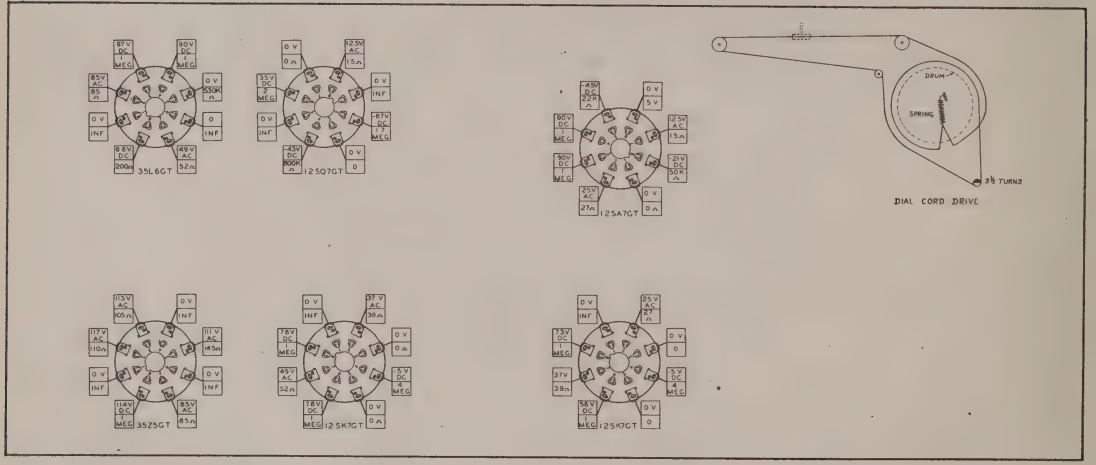


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1 - DC Voltage measurements are at 20,000 ohms per volt: AC Voltage measured at 1000 ohms per volt.

2 - Socket connections are shown as bottom views.

3 - Measured values are from socket pin to common negative.

4 - Line voltage maintained at 117 volts for voltage readings.

5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.

6 - Volume control at maximum, no signal applied for voltage measurements.

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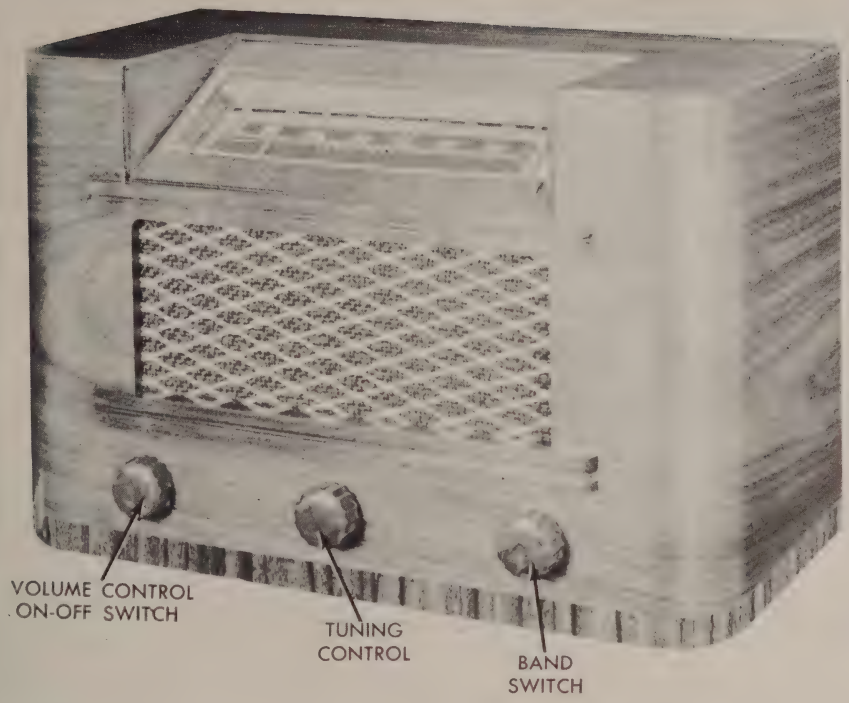
TRUETONE MODEL D2624



TRUETONE MODEL D2624

TRUETONE MODEL D2624

TRADE NAME	Truetone, Model D2624 (Factory 27D14-600 Issue A)
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Missouri
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES (SEVEN)	Types 12SA7 1st Det.-Osc., 12SK7 1st IF Amp., 6SS7 2nd IF Amp., 12SQ7 2nd Det.-AVC, 12SJ7 1st AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC Rating .370 Amp. @ 117 Volts
TUNING RANGE—BROADCAST	528-1600KC SHORT WAVE 5.75-18.3MC

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to ant. stator section of tuning gang. Low side to B-.	455KC	BC	High freq. end of dial. (Rotor fully open.)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating condenser must be connected between generator ground lead and receiver B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
200MMFD	High side to ext. ant. clip. Low side to B-.	1400KC	"	1400KC index line.	"	A5	Adjust for maximum output
"	"	"	"	"	"	A6	"
"	"	600KC	"	Tune to 600 KC signal.	"	A7	Adjust for maximum output while rocking gang.
"	"	1400KC	"	1400KC index line.	"	A5	Adjust for maximum output. Repeat last two steps for maximum output.
400Ω res	"	16MC	SW	"	"	A8	Adjust for maximum output
"	"	"	"	"	"	A9	"

Position dial pointer by turning gang condenser fully closed and adjust dial pointer over dial pointer index line on dial backplate. (Extreme left facing front of receiver. Volume control at maximum volume and output from signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	1st Det.-Osc.	12SA7	12SA7	8R	
2	1st IF Amp.	12SK7	12SK7	8N	
3	2nd IF Amp.	6SS7	6SS7	8N	
4	2nd Det.-AVC	12SQ7	12SQ7	8Q	
5	1st AF	12SJ7	12SJ7	8N	
6	Power Output	35L6GT	35L6GT	7AC	
7	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8(A)	50	150	45X342	2N521	DHR-2x50-150	UT-501	PRSA-50502	BRL5315C	Filter - Red
(B)	50	150				UT-501			" - Green
(C)	20	25		TC26	M-25-25	TA-25			Bypass - Yellow
9	.2	400	D67204	TP429	S-4-2	TC-2	484-.02	DT4P2	Line Isolating
10	.1	400	D66104	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Filter
11	.025	200	B64253	TP451	S-4-02	TC-12	484-.025	DT6S25	Audio Plate Decoup.
12	.01	200	B66103	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
13	.1	200	B66104	TP428	S-4-1	TC-1	484-.1	DT4P1	Audio Screen Bypass
14	.005	200	B66502	TP408	S-6-005	TC-25	484-.005	DT6D5	Audio Coupling
15	.04	200	B66403	TP425	S-6-04	TC-14	484-.04	DT4S4	Tone Compensation
16	.04	200	B66403	TP425	S-6-04	TC-14	484-.04	DT4S4	AVC Filter
17	.1	200	B66104	TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Network
18	.04	200	B66403	TP425	S-4-02	TC-14	484-.04	DT4S4	12SA7 Screen Bypass
19	.001	200	B66102	TP404	S-6-001	TC-21	484-.001	DT6D1	Ant. Coupling
20	.01	200	B66103	TP421	S-4-01	TC-11	484-.01	DT4S1	35L6 Plate Bypass
21	470	500	47X467	MC245	M0.5-35	1FM-35	1468-.0005	5W5T5	Audio Plate Bypass
22	47	500	47X446	MCB225	M0S.5-45	MS-45	1469-.00005	5R5Q5	Tone Compensation
23	100	500	47X476	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Diode
24	47	500	47X463	MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	RF Bypass Vol. Cont.
25	47	500	47X446	MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	IF Coupling
26	68	500	47X466	MC230	M0S.5-47	MS-47	1469-.00007	5W5Q7	Osc. Grid Cond.
27	.00475	180	46X289						Osc. Padder*

*Should be replaced with exact value. A value of .005 may be used with slight loss of sensitivity and dial calibration on the short wave band.

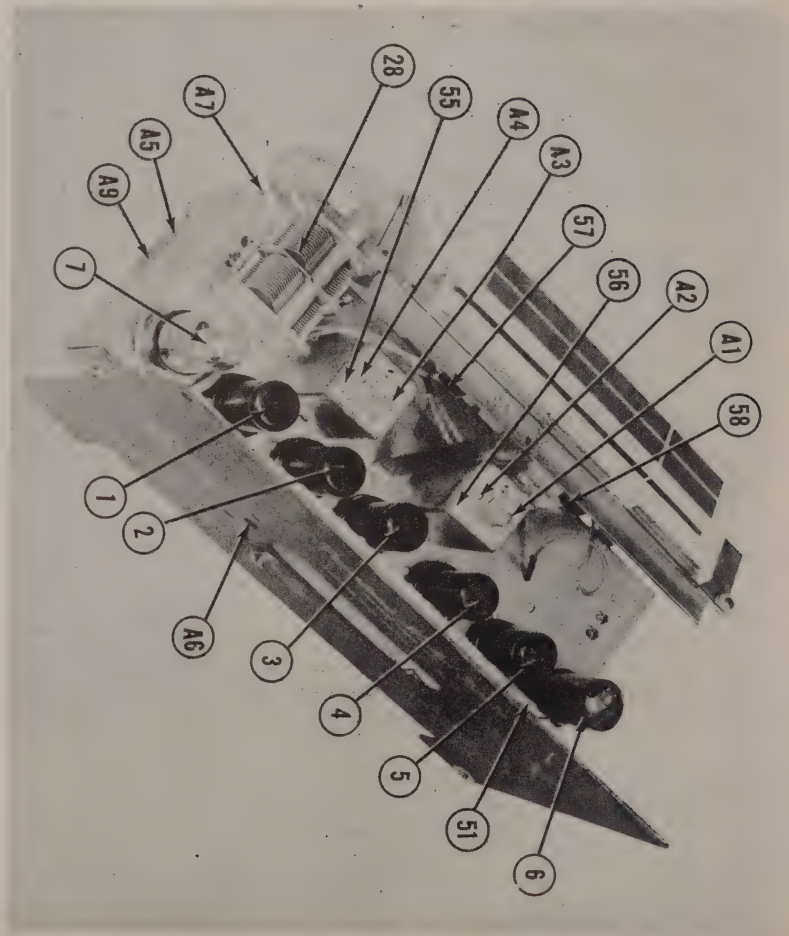
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	MALLORY* PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
29(A)	500K	1	36X309	MK401	D13-133	AM-60-4	Volume control
(B)	Shaft		Not req.	Not req.	E	KSS-3	Attach to 29A per instructions
(C)	Switch		" "	M26	41	SW-A	" " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
30	39KΩ	½	B84393	BTS-39K	Or.-Wh.-Or. 1st Det. Grid
31	4700Ω	½	B84472	BTS-4700	Yl.-Vi.-Red 1st Det. Screen Dropping
32	47KΩ	½	B85473	BTS-47K	Yl.-Vi.-Or. AVC Network
33	3300Ω	½	B84332	BTS-3300	Or.-Or.-Red 1st IF Plate Load
34	47KΩ	½	B85473	BTS-47K	Yl.-Vi.-Or. AVC Network
35	100KΩ	½	B85104	BTS-100K	Br.-Blk.-Yl. Diode Load
36	2.2 Meg.	½	B85225	BTS-2.2 Meg	Red-Red-Grn. AVC Filter
37	4.7 Meg.	½	B85475	BTS-4.7 Meg	Yl.-Vi.-Grn. 1st AF Grid
38	15KΩ	½	B84153	BTS-15K	Br.-Grn.-Or. Tone Compensation
39	470KΩ	½	B85474	BTS-470K	Yl.-Vi.-Yl. 1st AF Screen Dropping
40	33KΩ	½	B84333	BTS-33K	Or.-Or.-Or. 1st AF Plate Load
41	82KΩ	½	B84823	BTS-82K	Gray-Red-Or. 1st AF Plate Dropping
42	470KΩ	½	B85474	BTS-470K	Yl.-Vi.-Yl. Output Grid
43	180Ω	½	B84181	BW-½-180	Br.-Gray-Br. Output Cathode
44	220KΩ	½	B85224	BTS-220K	Red-Red-Yl. Line Isolating
45	775Ω	28	43X214		Line Dropping
46	27Ω	½	B84270	BW-½-27	Red-Vi.-Blk. Rectifier Ballast
47	1500Ω	1	C85152	BTA-1500	Br.-Grn.-Red Filter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
48	3480Ω	3.56Ω	343Ω	.87Ω	51X120A	A3876	T-13S39		When installing Part A3876 it will be necessary to drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TRUETONE PART No.	JENSEN PART No.		
49	FIELD FM	VC IMP. 3.56Ω	12A430	None		
50	CONE DIA. Oval 4"x6"	VC DIA. 5/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	
51	Loop Ant.	.3Ω	1.2Ω	26A386		
52	SW Ant. Coil	.5Ω	.1Ω	9A1443	14-1044	
53	BC Osc. Coil	.1Ω	5.8Ω	9A1442	14-1040	
54	SW Osc. Coil	.2Ω	.1Ω	9A1444	14-1046	
55	Input IF	20Ω	19Ω	9A1793	16-6658	
56	Output IF	20.5Ω	17.5Ω	9A1794	16-6660	

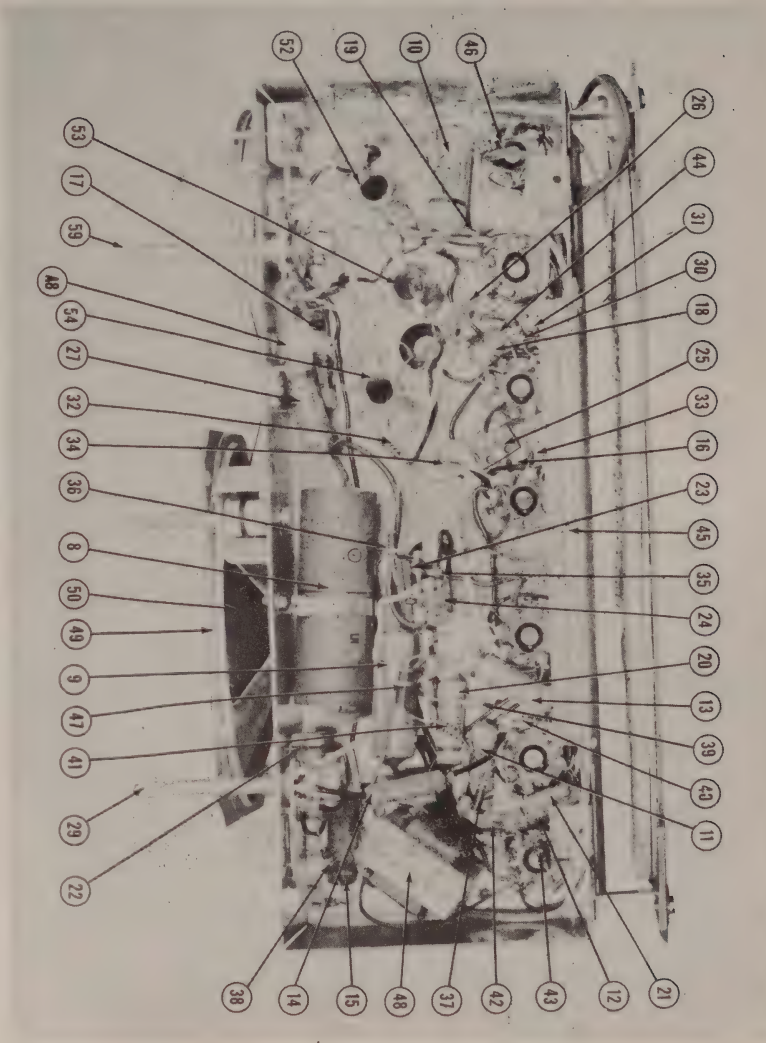
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					TRUETONE PART No.		
57	Bayonet	6-8	.15	Brown	7A193		Type 47
58	"	"	"	"	"		

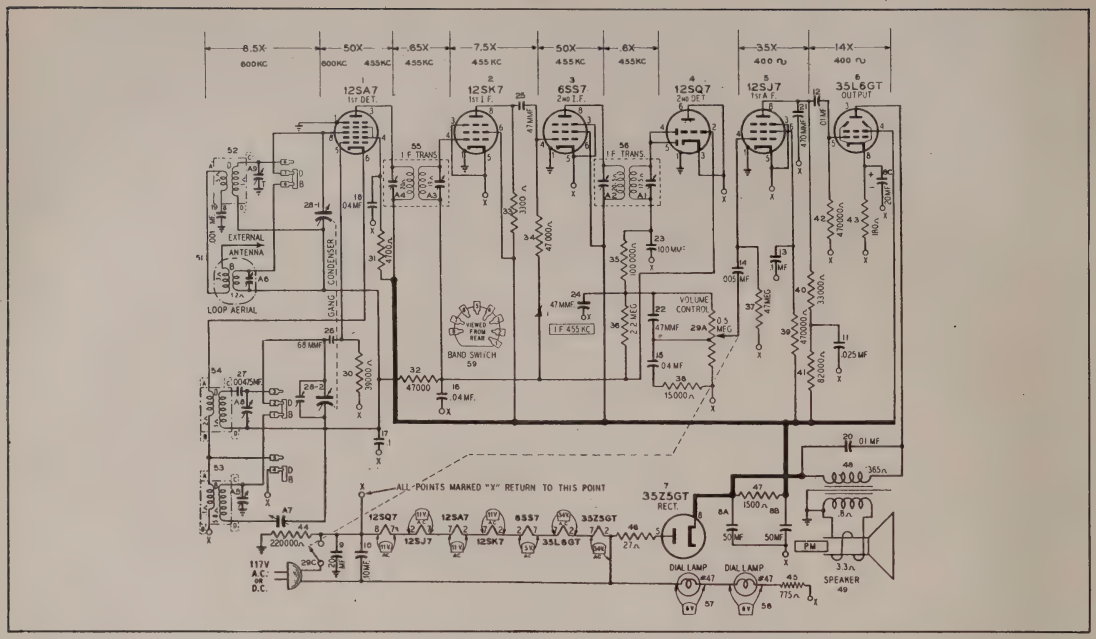
MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
28	Tuning Cap.	14A148	2 Gang Tuning Capacitor & Pulley
59	Band Switch	2A206	
A5	Trimmer	17A152	Broadcast Osc. 2-25 MMF
A6	"	17A123	Broadcast Ant. 1-12 MMF
A7	"	17A234	Broadcast Padder 250-525 MMF
A8	"	17A174	Short Wave Osc. 2-25 MMF
A9	"		Short Wave Ant. 2-25 MMF Part of A5(17A152)
	Knob (Tuning)	10A520	For use with Ivory Cabinet
	" (Volume)	10A521	" " " " "
	" (Band Sw.)	10A522	" " " " "
	" (Tuning)	10A467	" " " Walnut "
	" (Volume)	10A468	" " " " "
	" (Band Sw.)	10A469	" " " " "

CHASSIS—BOTTOM VIEW

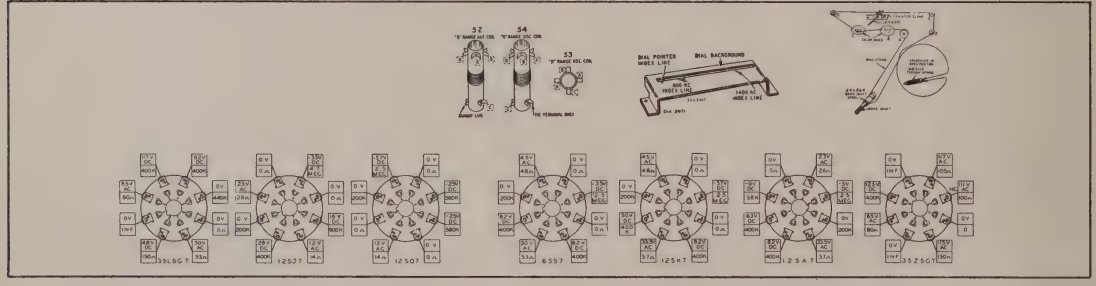


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1 - DC Voltage measurements are at 20,000 ohms per volt: AC Voltages measured at 1000 ohms per volt.

2 - Socket connections are shown as bottom views.

3 - Measured values are from socket pin to common negative.

4 - Line voltage maintained at 117 volts for voltage readings.

5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.

6 - Volume control at maximum, no signal applied for voltage measurements.

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PACKARD-BELL MODEL 551

PACKARD-BELL MODEL 551

PACKARD-BELL MODEL 551

TRADE NAME	Packard-Bell, Model 551
MANUFACTURER	Packard-Bell Co., 3443 Wilshire Blvd., Los Angeles, California
TYPE SET	AC Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE)	Types 6SA7 Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC-AF, 6K6GT Power Output, 6X5GT Rectifier.
POWER SUPPLY	110-120 Volts AC Rating .285 Ampere @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1740KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.01 MFD	High side to pin 8 (signal grid) of 6SA7. Low side to chassis.	455KC	550KC	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Shift loop to gain access to trimmers. Return loop to original position before continuing with alignment.
	Loop	1750KC	1750KC	"	A5	Adjust for maximum output. Connect signal generator to loop of few turns of wire and radiate signal into receiver loop.(about 2 foot space).
	"	1330KC	1330KC	"	A6	Adjust for maximum output. Signal generator output connected as for A5 adjustment.
	"	570KC	570KC	"	31	Adjust position of loose turn on loop for maximum output.

Volume control at maximum volume and output from signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: PACKARD-BELL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	6SA7	6SA7	8R	
2	IF Amp.	6SK7	6SK7	8N	
3	Det.-AVC-AF	6SQ7	6SQ7	8Q	
4	Power Output	6K6GT	6K6GT	7S	
5	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PACKARD-BELL PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6	40	350	24004B	TC78	M-40-450	2-UT-203	PRS450-40	BR4035	Filter
7	20	350	24003	TC65	M-20-450	UT-203	PRS450-20	BR2035	"
8	.005	600	23004	TP408	S-6-005	TC-25	684-.005	DT6D5	6K6 Plate Bypass
9	.02	600	23007	TP423	S-6-02	TC-12	684-.02	DT6S2	Audio Coupling
10	.005	600	23004	TP408	S-6-005	TC-25	684-.005	DT6D5	" "
11	.05	600	23009	TP415	S-6-05	TC-15	684-.05	DT6S5	AVC Filter
12	.05	600	23009	TP415	S-6-05	TC-15	684-.05	DT6S5	Screen Bypass
13(A)	220	500	23206	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass ‡
(B)	.002	600		TP405	S-6-002	TC-22	684-.002	DT6D2	" " " " †
14	220	500	23206	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	RF Bypass Vol. Cont.
15	250	500		MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Osc. Grid Cond.

‡ Used in Initial Production
† Used in Later Models

CONTROLS

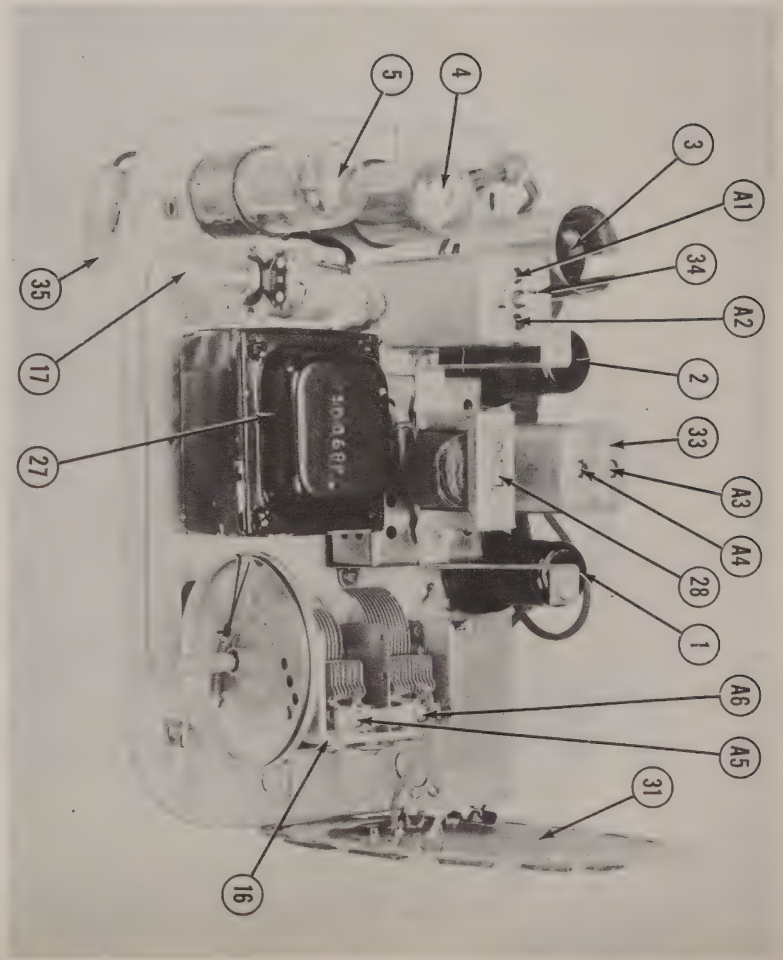
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PACKARD-BELL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17(A)	500KΩ	1	25003A	MR48	D13-133	M-60-Z	Volume control
(B)	Shaft		Not req.	Not req.	A	Not Req.	Attach to 17A per instructions
(C)	Switch		" "	M26	41	SW-A	" " " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PACKARD-BELL PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
18	22KΩ	½	73041	BTS-22K	Red-Red-Or. Osc. Grid
19	47Ω	½	73009	BW-½-47	Yl.-Vi.-Blk. IF Cathode
20	2.2 Meg.	½	73055	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
21	4700	1	73075	BTA-4700	Yl.-Vi.-Red Screen Dropping*
22	4.7 Meg.	½	73057	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
23	100KΩ	½	73047	BTS-100K	Br.-Blk.-Yl. 1st AF Plate Load
24	1 Meg.	½	73053	BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
25	1000	1	73071	BW-1-1000	Br.-Blk.-Red Filter
26	180	1	73077	BW-1-180	Br.-Gray-Br. Bias

* Value may be 5600Ω in some sets.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	PACKARD-BELL PART No.	STANCOR PART No.	THORDARSON PART No.	
27	117VAC @.300amp	430V.CT @.080amp	6 VAC@ 2.0Bamp		89001A	P-6120#	T-13R20#	
	# Drill new mounting holes and enlarge the shell cut-out.							

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PACKARD-BELL PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
28	4400Ω	3Ω	600Ω	.5Ω	89401B	A-3678	T-13S39		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			PACKARD-BELL PART No.	JENSEN PART No.		
29	FIELD	VC IMP.				
	FM	3Ω	83203	ST-113		
	CONE DIA.	VC DIA.				
30	4"	2"	NOT REALILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	PACKARD-BELL PART No.	MEISSNER PART No.	
31	Loop Ant.	.1Ω	2.1Ω	29301D		
32	Osc. Coil		8.3Ω	29202	14-1033	
33	Input IF	21Ω	22Ω	29004A	16-6658	
34	Output IF	16Ω	16Ω	29001A	16-6660	

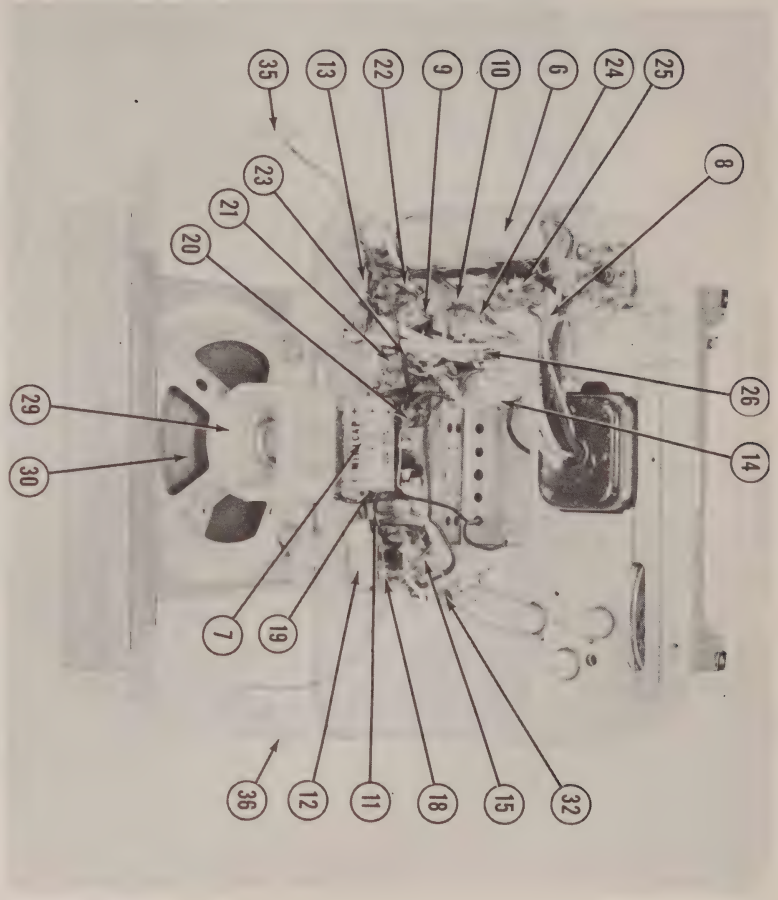
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					PACKARD-BELL PART No.		
35	bayonet	6-8	0.15	Brown	54002		Type 47
36	"	"	"	"	"		" "

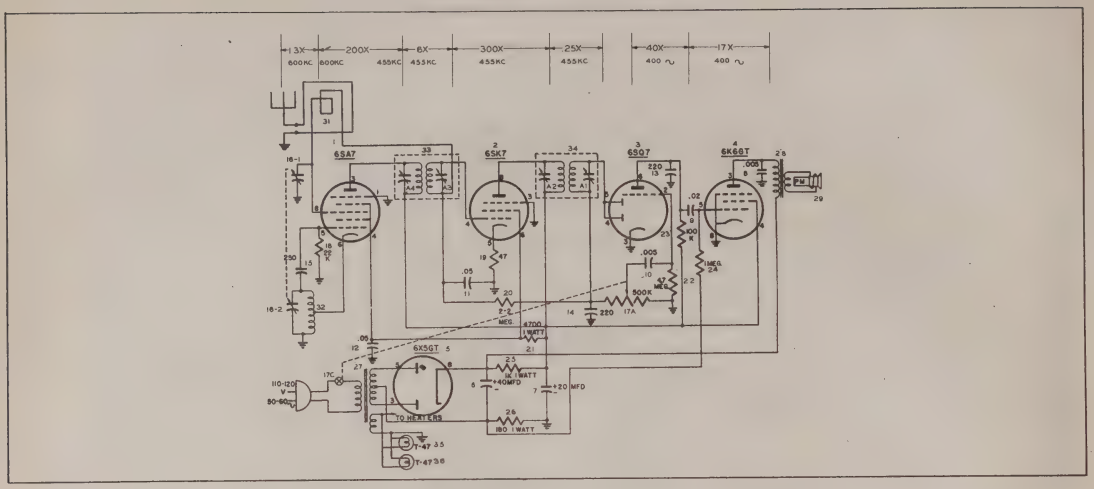
MISCELLANEOUS

ITEM No.	PART NAME	PACKARD-BELL PART No.	NOTES
A5	Trimmer		Oscillator, Part of 23502G
A6	"		Antenna, Part of 23502G
	Tuning Cap.	23502-G	2 Gang Variable
	Crystal(Dial)	55001	For Wood Cabinet
	" "	55002	For Plastic Cabinet
	Dial Scale	38005	For Wood Cabinet
	" "	38009	For Plastic Cabinet
	Grille	A47002C	Plastic, Walnut
	"	B47002C	Plastic, Ivory
	Knob	C52015C	Walnut
	"	A52015C	Ivory

CHASSIS—BOTTOM VIEW

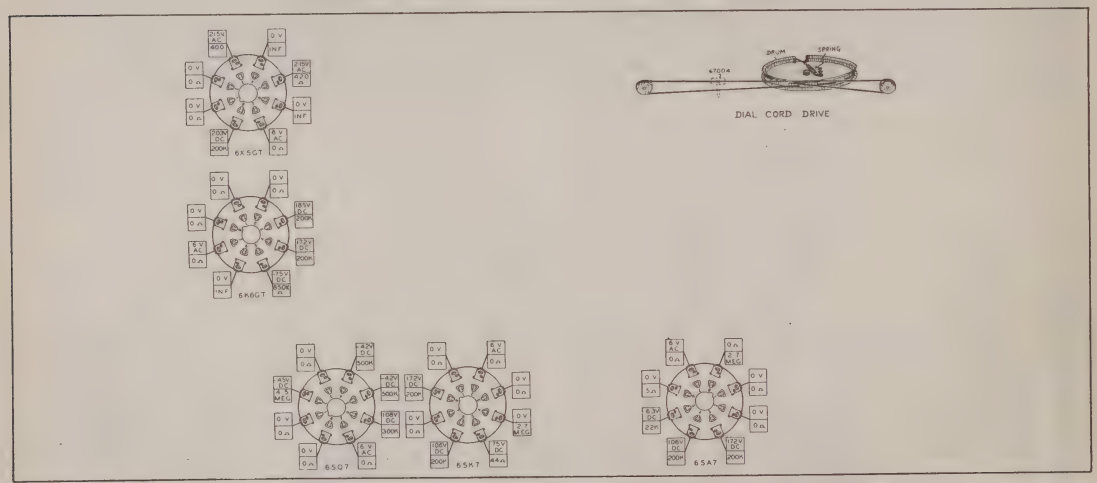


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1 - DC Voltage measurements are at 20,000 ohms per volt: AC Voltages measured at 1000 ohms per volt..

2 - Socket connections are shown as bottom views.

3 - Measured values are from socket pin to common negative.

4 - Line voltage maintained at 117 volts for voltage readings.

5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.

6 - Volume control at maximum, no signal applied for voltage measurements.

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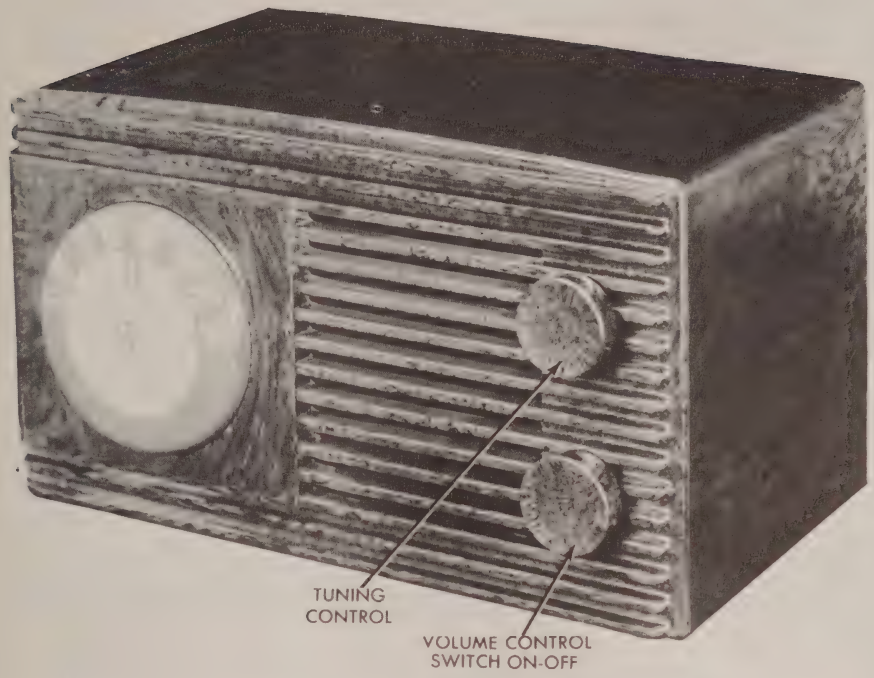
TEMPOTONE
MODEL 500E SERIES



TEMPOTONE
MODEL 500E SERIES

TEMPOTONE MODEL 500E

TRADE NAME	Tempotone, Model 500E
SUPPLIER	Barker Bros. Co., 7th and Figueroa St., Los Angeles, California
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE)	Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC Rating .245 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	530-1620KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05MFD	High side to ant. stator section of tuning gang. Low side to B-.	455KC	High freq. end of dial.	Across voice coil.	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and receiver B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
200MMFD	High side to ant. (Blue) lead. Low side to B-.	1400KC	1400KC	"	A5	Adjust for maximum output. (Osc. to dial scale)
"	"	"	"	"	A6	Adjust for maximum output

Volume control at maximum volume and output from signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: TEMPOTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TEMPOTONE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6(A)	50	150	A-40045-1	2N520	M-50+30-150	TA-530	PRS150-40-40	BRD3515	Filter - Red
(B)	30	150							" - Blue
7	.05	400	B-10417-20	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
8	.05	400	B-10417-20	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Isolating
9	.1	400	15143	TP428	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Pwr. Supp.
10	.01	200	B-10417-1	TP421	S-4-01	TC-11	484-.01	DT4S1	50L6 Plate Bypass
11	.01	400	B-10417-18	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
12	.01	200	B-10417-1	TP421	S-4-01	TC-11	484-.01	DT4S1	" "
13	.05	200	B-10417-20	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
14	.01	200	B-10417-1	TP421	S-4-01	TC-11	484-.01	DT4S1	Ant. Coupling
15	250	500	A-10398-24	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass
16	100	500	A-10398-18	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Vol. Cont.
17	100	500	A-10398-18	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	Osc. Grid Cond.

CONTROLS

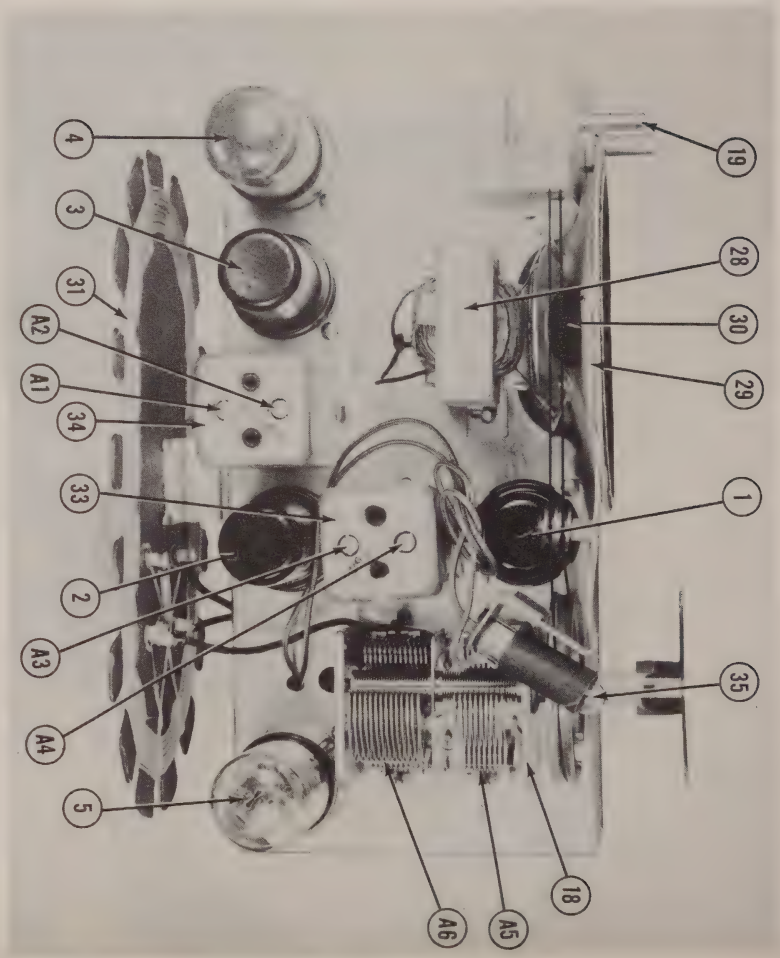
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TEMPOTONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19(A)	500K	1	A-20365-1	MR45*			Volume control
(B)	Shaft		Not req.	M26			Attach to 19A per instructions
(C)	Switch		" "				" " " " "

* Difficult to install. File sides of chassis hole, bend terminals and rotate to position. Attach switch after partial insertion of control.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TEMPOTONE PART No.	IRC PART No.	IDENTIFICATION CODES
20	22KΩ	1/2	B-10355-332	BTS-22K	Red-Red-Or. Osc. Grid
21	2.2 Meg.	1/2	B-10355-358	BTS-2.2 Meg	Red-Red-Grn. AVC Network
22	10 Meg.	1/2	B-10355-376	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
23	220KΩ	1/2	B-10355-332	BTS-220K	Red-Red-Yl. 1st AF Plate Load
24	470KΩ	1/2	B-10355-341	BTS-470K	Yl.-Vi.-Yl. Output Grid
25	150Ω	1/2	A-10364-117	BW-1/2-150	Br.-Grn.-Br. Output Cathode
26	1500Ω	1/2	B-10359-254	BW-2-1500	Br.-Grn.-Red Filter
27	27Ω	1/2	27157	BW-1/2-27	Red-Vi.-Blk. Rectifier Ballast

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA TEMPOTONE PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	INSTALLATION NOTES
26	1600Ω	2.8Ω	190Ω	.45Ω	20371	A-3678#	T-14S82#	#File out mounting holes, bend mounting tabs down and mount by the original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA TEMPOTONE PART No.	REPLACEMENT DATA JENSEN PART No.	INSTALLATION NOTES
	FIELD	VC IMP.			
29	FM	2.8Ω	20354-1	ST-113†	†Fabricate mounting bracket.
	CONE DIA.	VC DIA.			
30	4"	½"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.		

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA TEMPOTONE PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
31	Loop Ant.	0Ω	1Ω	8-14123		
32	Osc. Coil		6.5Ω	C3965	14-1032	
33	Input IF	70Ω	25Ω	03964	16-6655	
34	Output IF	20Ω	20Ω	03965	16-6660	

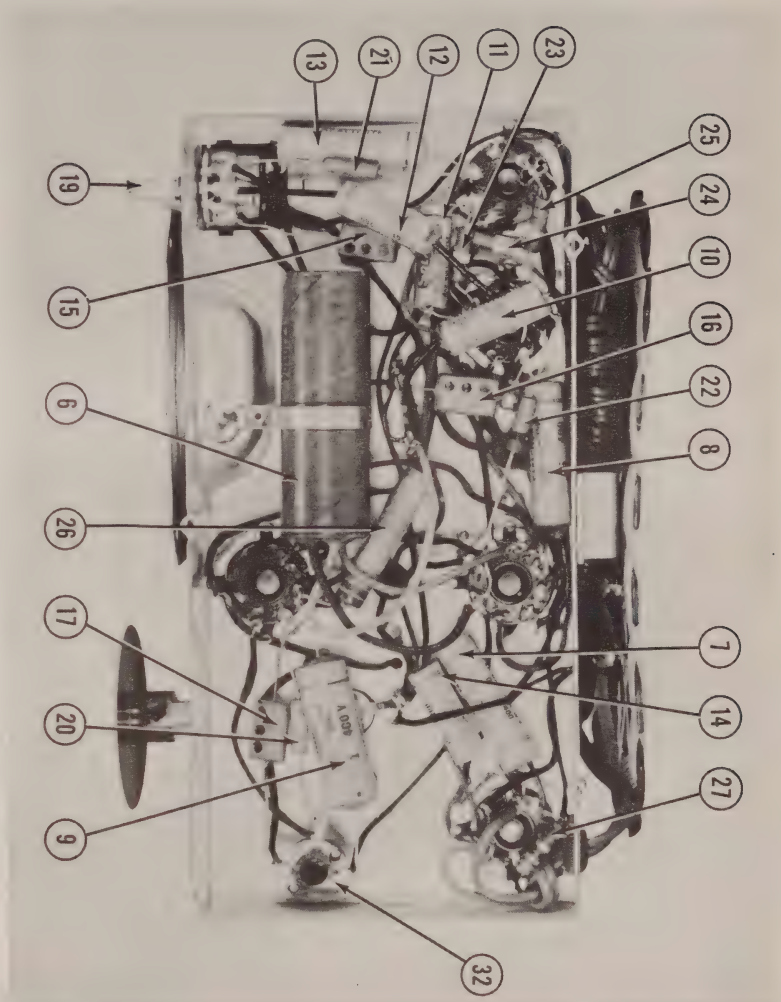
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA TEMPOTONE PART No.	INSTALLATION NOTES
35	Bayonet	6-8	0.15	Brown	B-10705-8	Type 47

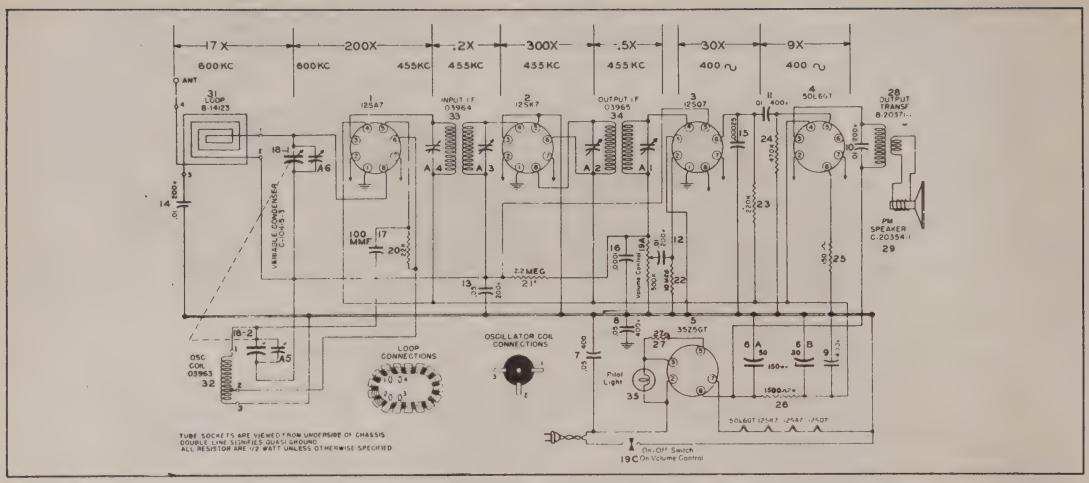
MISCELLANEOUS

ITEM No.	PART NAME	TEMPOTONE PART No.	NOTES
A5	Trimmer		Oscillator, Part of C-10415-3
A6	"		Antenna, Part of C-10415-3
18	Tun. Cap.	C-10415-3	2 Gang Variable Tuning Cap.

CHASSIS—BOTTOM VIEW

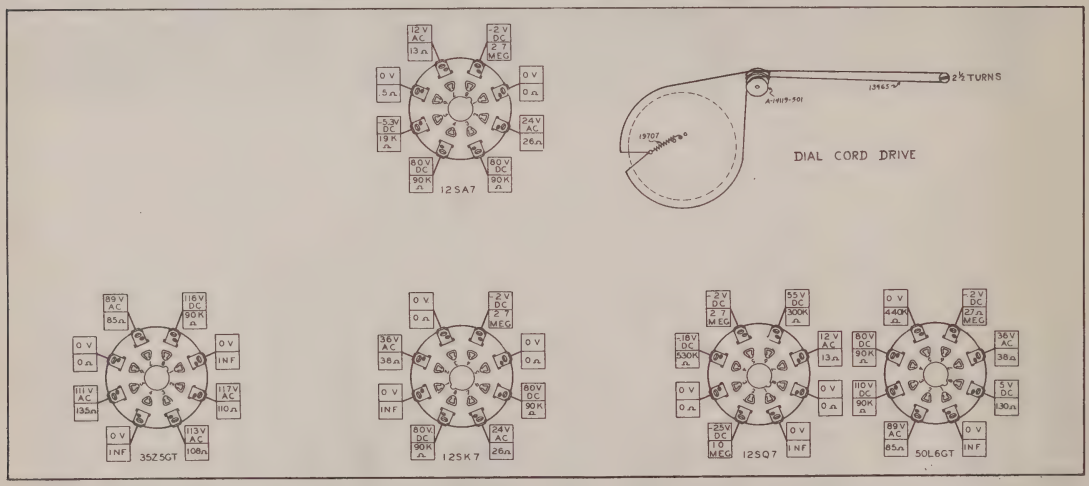


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1 - DC Voltage measurements are at 20,000 ohms per volt: AC Voltages measured at 1000 ohms per volt.

2 - Socket connections are shown as bottom views.

3 - Measured values are from socket pin to common negative.

4 - Line voltage maintained at 117 volts for voltage readings.

5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.

6 - Volume control at maximum, no signal applied for voltage measurements.

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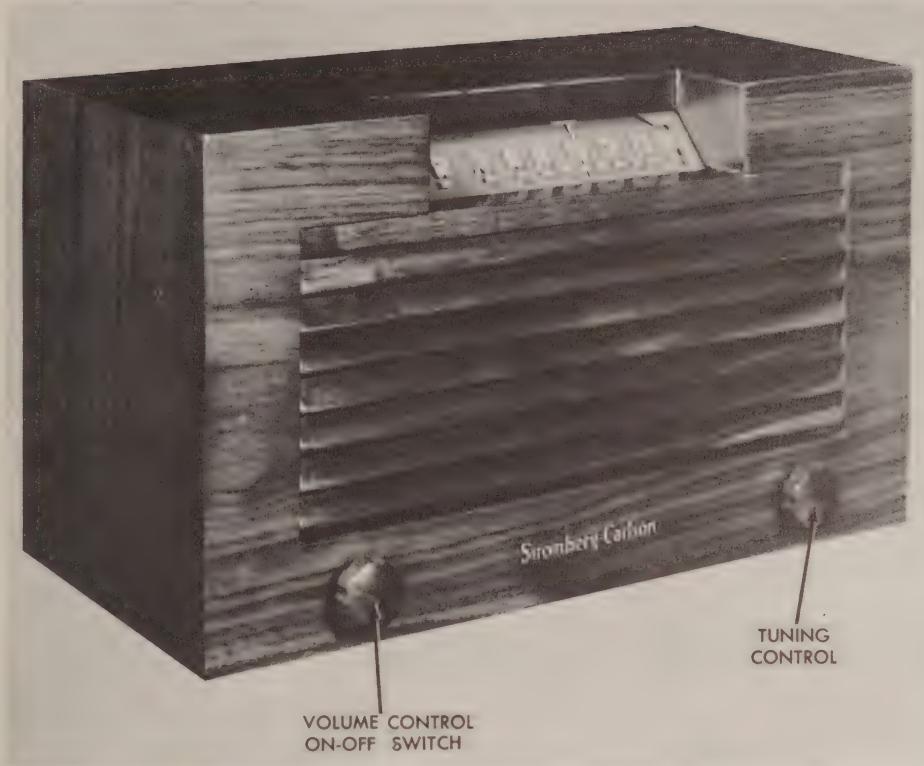
STROMBERG-CARLSON
MODELS 1101-HB, 1101-HI, 1101-HM,
1101-HW, 1101-HY (Series Nos. 10-11)



STROMBERG-CARLSON MODEL 1101-HW

TRADE NAME	Stromberg-Carlson, Models 1101-HB, 1101-HI(Ch.112002),1101-HM(Ch.112003),
MANUFACTURER	Stromberg-Carlson Co., Rochester 3, N.Y. 1101-HW, 1101-HY(Ch.112001)
TYPE SET	AC-DC Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types 12SK7 RF Amp., 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-1AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC Rating .250 Amp. @ 117 Volts AC.
TUNING RANGE—BROADCAST	540KC-1600KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.01 MFD	High side to signal grid of 12SA7 Low side to common negative.	455KC	Fully closed (max. cap.)	Across voice coil.	A1, A2, A3, A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between signal generator ground lead and receiver common neg. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
	Loop	1580KC	Fully open (min. cap.)	"	A5	Adjust for maximum output. Connect signal generator to loop of few turns of wire and couple loosely to receiver loop by spacing.
	"	1400KC	1400KC	"	A6	Adjust for maximum output.
	"	"	"	"	A7	" " " "

Volume control at maximum and output from signal generator as low as possible for all adjustments. Use insulated alignment screwdriver.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: STROMBERG CARLSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7	12SK7	8N	
2	Converter	12SA7	12SA7	8R	
3	IF Amp.	12SK7	12SK7	8N	
4	Det.-AVC-1AF	12SQ7	12SQ7	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: STROMBERG CARLSON PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7(A)	40	150	111001	FP214	DY-2x40-150	EL-25	AF88D	UP6BJ34	▲ Filter*
(B)	40	150							■ "
8	.05	400	40632	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
9	.05	400	40632	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Isolating
10	.002	400	27646	TP405	S-6-002	TC-22	484-.002	DT6D2	35L6 Plate Bypass
11	.01	600	25485	TP410	S-6-01	TC-11	684-.01	DT6S1	Audio Coupling
12	.01	600	25485	TP410	S-6-01	TC-11	684-.01	DT6S1	" "
13	.05	400	40632	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
14	.1	400	23463	TP428	S-4-1	TC-1	484-.1	DT4P1	IF Screen Bypass
15	.05	400	40632	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
16	100	500	24559	MC235	M0.5-31	1FM-31	1468-.0001	SW5T1	12SQ7 Plate Bypass

*Use insulating cover.

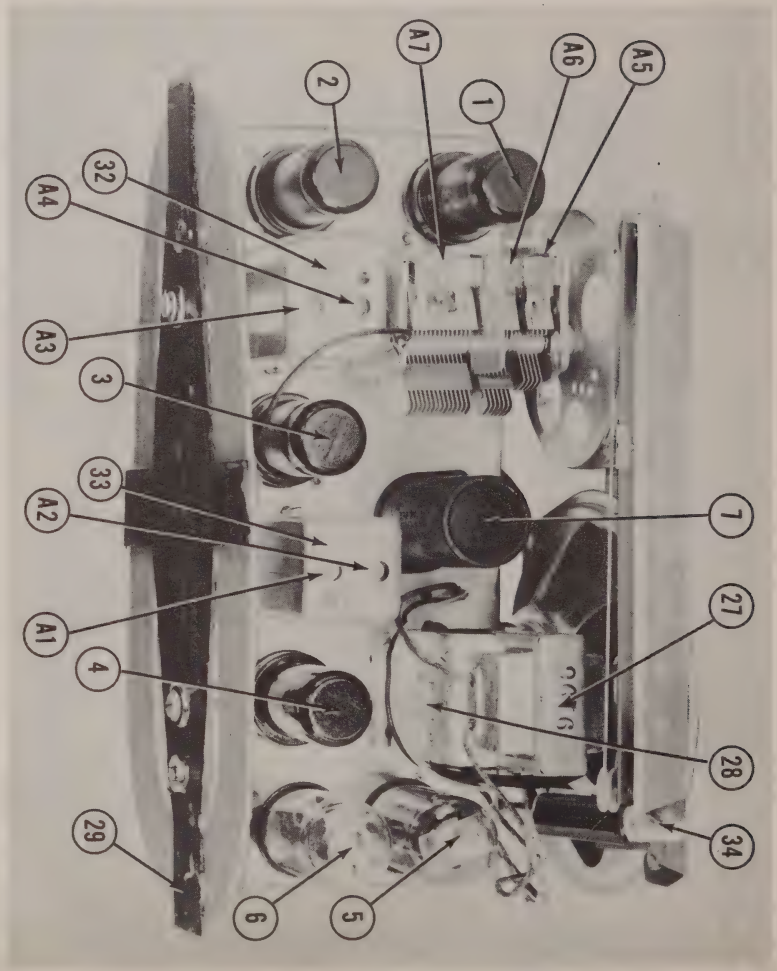
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STROMBERG CARLSON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17(A)	1 Meg.	1	145001	MR53	DS13-137	M-63-Z	
(B)	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 17A per instructions.
(C)	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STROMBERG-CARLSON PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
18	22KΩ	½	26349	BTS-22K	Red-Red-Or. Osc. Grid
19	10 Meg.	½	26381	BTS-10 Meg.	Br.-Blk.-Blue AVC Network
20	100KΩ	½	26357	BTS-100K	Br.-Blk.-Yl. Filter
21	2.2 Meg.	½	26373	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
22	270KΩ	½	26362	BTS-270K	Red-Vi.-Yl. Line Isolating
23	10 Meg.	½	26381	BTS-10 Meg.	Br.-Blk.-Blue Grid Load
24	390KΩ	½	26364	BTS-390K	Or.-Wh.-Yl. Plate Load
25	560K	½	26366	BTS-560K	Grn.-Blue-Yl. Voltage Divider
26	2.7 Meg.	½	28196	BTS-2.7 Meg.	Red-Vi.-Grn. Output Grid
27	15Ω	½	26311	BW-½-15	Br.-Grn.-Blk. Rectifier Ballast

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA STROMBERG CARLSON PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA	INSTALLATION NOTES
28(A)	2180Ω	3.5Ω	223Ω	.92Ω	Part of 155001	A-3876#	T-14882#	8775#	#Bend mounting tabs of the replacement transformer so as to mount by the same bent ears holding the original.
28(B)	2180Ω	3.5Ω	223Ω	.92Ω	155020	A-3876#	T-14882#	8775#	

Item 28A Used in Series 10 Receivers.
Item 28B Used in Series 11 Receivers.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA STROMBERG CARLSON PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA	INSTALLATION NOTES
	FIELD	VC IMP.				
29(A)	425Ω	3.5Ω	155001	ST-451†		†Bracket must be made so the replacement speaker is in the same position as that of the original. Small extension bracket must be made so the escutcheon will fasten to the replacement speaker and still be in its original position. Edge of speaker must be filed slightly to clear volume control.
	CONE DIA.	VC DIA.				
	5-1/8"	5/8"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			
	FIELD	VC IMP.				
29(B)	PM	3.5Ω	155013	ST-106†		
	CONE DIA.	VC DIA.				
	5-1/8"	9/16"	155006	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.		

Item 29A Used in Series 10 Receivers.
Item 29B Used in Series 11 Receivers.

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA STROMBERG-CARLSON PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
30	Loop Ant.	.5Ω		139005		
31	R. F.	90Ω	6Ω	114001	14-1027	
32	Osc.	.5Ω	10Ω	114002	14-1040	
33	1st IF	13Ω	13Ω	114301	16-6658	
34	2nd IF	13Ω	13Ω	114302	‡16-6660	‡Connect 47K resistor in series with grid return from transformer to terminal lug where yellow wire is now connected. From this lug connect 500 MMFD to common negative.

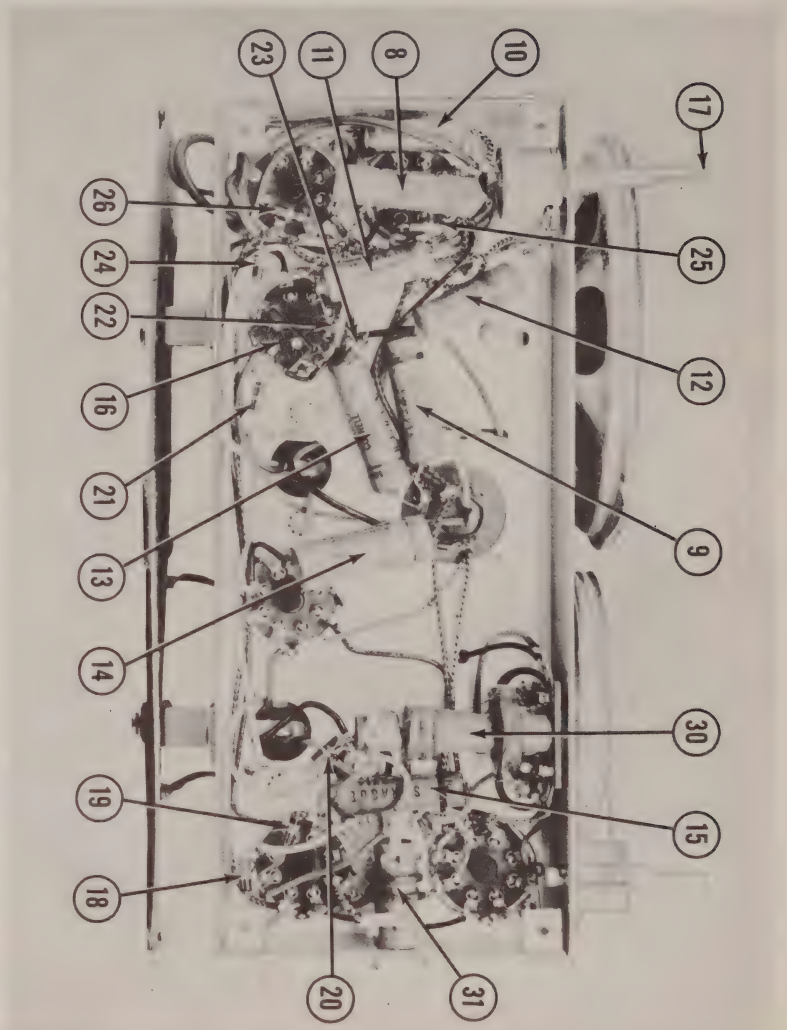
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA STROMBERG-CARLSON PART No.	REPLACEMENT DATA	INSTALLATION NOTES
35	Bayonet	6-8	.150	brown	30993		Type 47

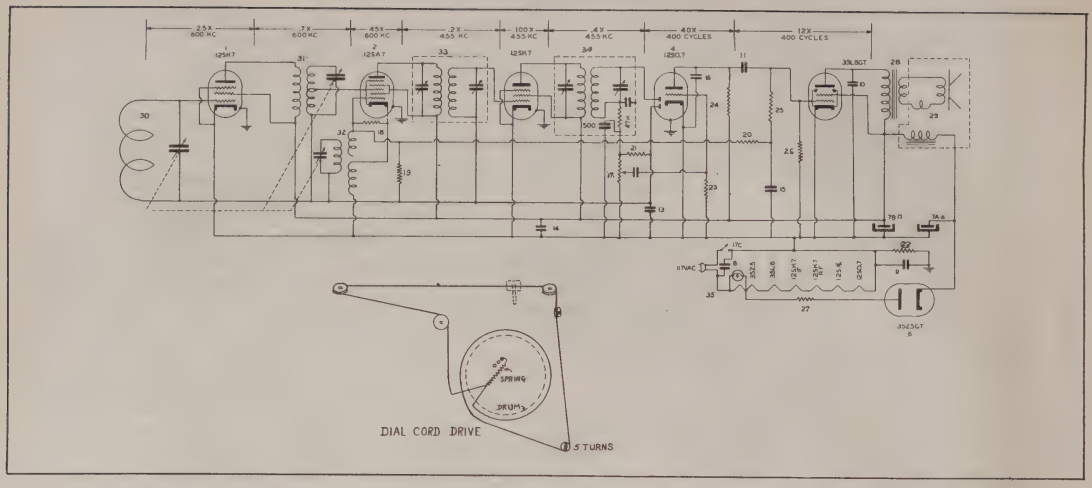
MISCELLANEOUS

ITEM No.	PART NAME	STROMBERG-CARLSON PART No.	NOTES
A5	Trimmer		Oscillator, Part of 110001
A6	"		RF " " "
A7	"		Antenna, " " "
	Tuning Cap.	110001	3 Gang Variable Main Tuning
	Choke	1s1004	Filter Choke (Used in Series 11 only)
	Dial Pointer	144001	1101-HB, HI, HW, HY
	" "	144002	1101-HM
	Dial	122011	1101-HB, HI, HW, HY
	"	122003	1101-HM
	Dial Cord Asby.	124001	Assembly

CHASSIS—BOTTOM VIEW

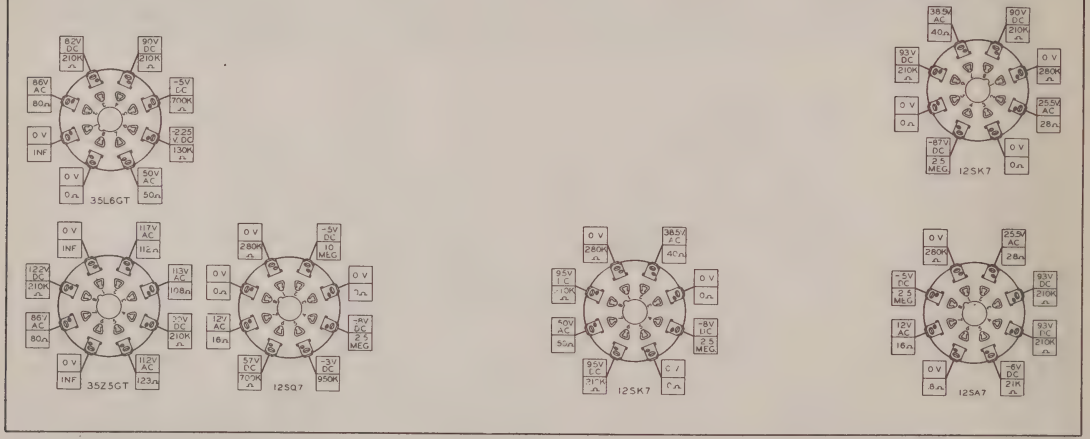


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1 - DC Voltage measurements are at 20,000 ohms per volt: AC Voltages measured at 1000 ohms per volt.

2 - Socket connections are shown as bottom views.

3 - Measured values are from socket pin to common negative.

4 - Line voltage maintained at 117 volts for voltage readings.

5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.

6 - Volume control at maximum, no signal applied for voltage measurements.

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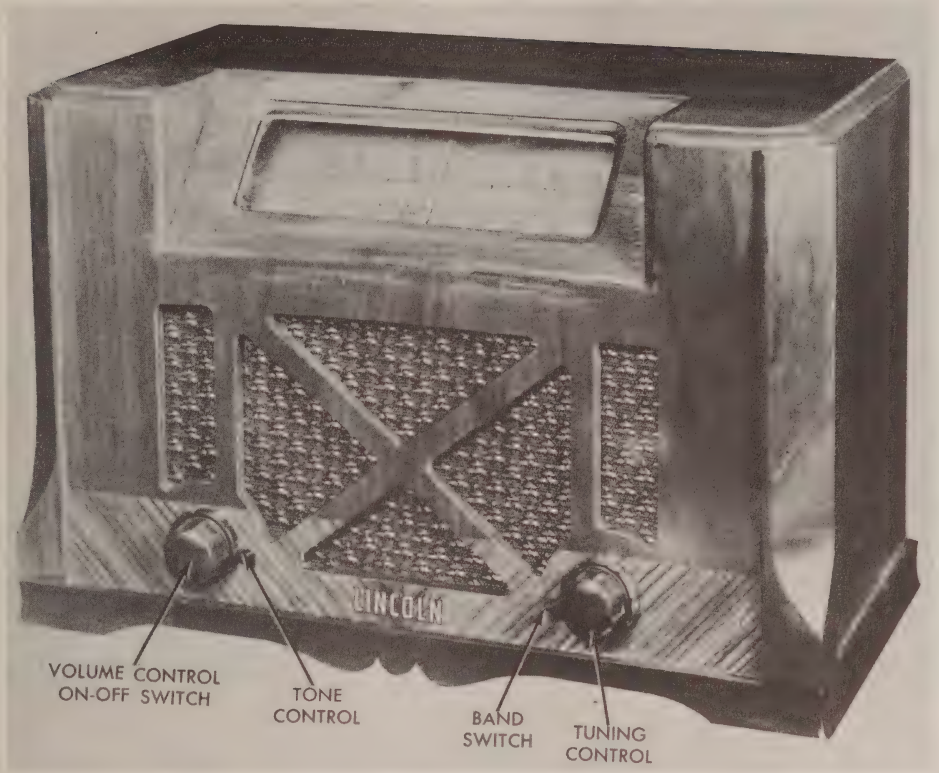
LINCOLN
MODEL S13L-B



LINCOLN MODEL S13L-B

LINCOLN
MODEL S13L-B

TRADE NAME	Lincoln, Model S13L-B
MANUFACTURER	Lincoln Radio & Television Corp., Chicago, Illinois
TYPE SET	AC - DC 2 Band Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types 7B7 RF Amp., 14Q7 Converter, 7B7 IF Amp., 14B6 Det.-AVC-AF, 50A5 Power Output, 35Y4 Rectifier
POWER SUPPLY	105-125 Volts AC-DC Rating .260 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1700KC **SHORT WAVE** 5.3-18MC

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to signal grid (pin 6) of 14Q7. Low side to chassis.	455KC	BC	High freq. end of dial.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and receiver chassis. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
"	High side to signal grid (pin 6) of 7B7. Low side to chassis.	"	"	Low freq. end of dial.	"	A5	Adjust for minimum output. Use isolation instructions as given for IF adjustments.
200 MMFD	High side to ant. (white) lead. Low side to chassis.	1600KC	"	1600KC	"	A6	Adjust for maximum output.
"	"	1400KC	"	Tune in 1400 KC signal.	"	A7	" " " "
"	"	600KC	"	Tune in 600 KC signal.	"	A8	Rock dial and adjust for maximum output. Return to A6 adjust at 1600KC and repeat adjustments for maximum output.
400 Ω res.	"	16MC	"	16MC	"	A9,A10.	Adjust for maximum output.

Volume control at maximum volume and output from signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: LINCOLN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	7B7	7B7	8V	Lock-in Type
2	Converter	14Q7	14Q7	8AL	"
3	IF Amp.	7B7	7B7	8V	"
4	Det.-AVC-AF	14B6	14B6	8W	"
5	Power Output	50A5	50A5	6AA	"
6	Rectifier	35Y4	35Y4	5AL	"

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: LINCOLN PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7(A)	30	150		2N513	M-2x30-150	TA-330	PRS150-40-40	BRD3315	Filter - Red
(B)	30	150							" - Blue
(C)	30	150		TC47	M-30-150	UT-301	PRS150-30	BR3015	"
8	.02	400		TP423	S-4-02	TC-12	484-.02	DT4S2	Line Filter
9	.03	400		TP424	S-6-03	TC-13	484-.03	DT4S3	Tone Control
10	.02	400		TP423	S-4-02	TC-12	484-.02	DT4S2	50A5 Plate Bypass
11	.02	200		TP423	S-4-02	TC-12	484-.02	DT4S2	Audio Coupling
12	.003	200		TP406	S-6-003	TC-23	484-.003	DT6D3	" "
13	.02	200		TP423	S-4-02	TC-12	484-.02	DT4S2	RF Bypass Pwr. Supp.
14	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
15	.003	200		TP406	S-6-003	TC-23	484-.003	DT6D3	Ant. Coupling
16	4000	300		MC463	MW.5-24	1FM-24	1467-.004	1D5D4	Fixed Pad S.W.
17	100	500		MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	Osc. Grid Cond.
18	1000	300		MC255	M0.3-21	1FM-21	1468-.001	1W5D1	RF Coupling

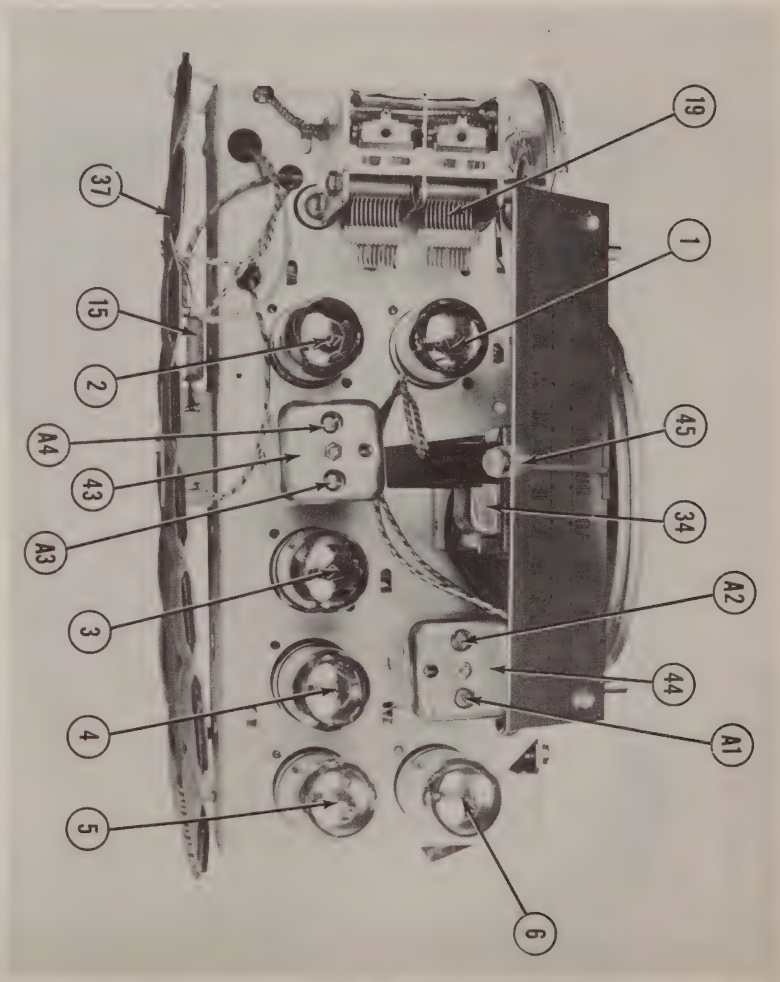
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: LINCOLN PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
20(A)	500KΩ	1	R-13332	MR48	D13-133	M-60-Z	Volume Control
(B)	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 20A per instructions
(C)	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: LINCOLN PART No.	IRC PART No.	IDENTIFICATION CODES
21	3300Ω	½		BTS-3300	Or.-Or.-Red RF Plate Load
22	6800Ω	¼		BTS-6800	Blue-Gray-Red Peaking Assembly
23	470KΩ	¼		BTS-470K	Yl.-Vi.-Yl. Converter Grid
24	3 Meg.	¼		BTS-3 Meg.	Or.-Blk.-Grn. AVC Network
25	22KΩ	¼		BTS-22K	Red-Red-Or. Osc. Grid
26	1 Meg.	¼		BTS-1 Meg.	Br.-Blk.-Grn. Diode Load
27	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue 1st AF Grid
28	470KΩ	¼		BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
29	470KΩ	¼		BTS-470K	Yl.-Vi.-Yl. Output Grid
30	150Ω	½		BW-½-150	Br.-Grn.-Br. " Cathode
31	390Ω	1		BW-1-390	Or.-Wh.-Br. Filter
32	100Ω	½		BW-½-100	Br.-Blk.-Br. "
33	100Ω	½		BW-½-100	Br.-Blk.-Br. Tuned Circuit

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		LINCOLN PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
34	2000Ω	3.2Ω	200Ω	.84Ω		A-3876#	T-14S82#		#File out mounting holes, bend mounting tabs down, and mount by the original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			LINCOLN PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
35	PM	3.2Ω		ST-106		
	CONE DIA.	VC DIA.				
36	4-5/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	LINCOLN PART No.	MEISSNER PART No.	
37	Loop Ant.	0Ω	.5Ω			
38	SW Ant. Coil	.1Ω	.1Ω		14-1044	
39	BC Osc. Coil		7½Ω			
40	SW Osc. Coil		0Ω			
41	Wave Trap	8Ω				
42	Peaking Coil	1.5Ω				
43	Input IF	24Ω	23Ω	13902	16-6658	
44	Output IF	13Ω	13Ω	13903	16-6670	

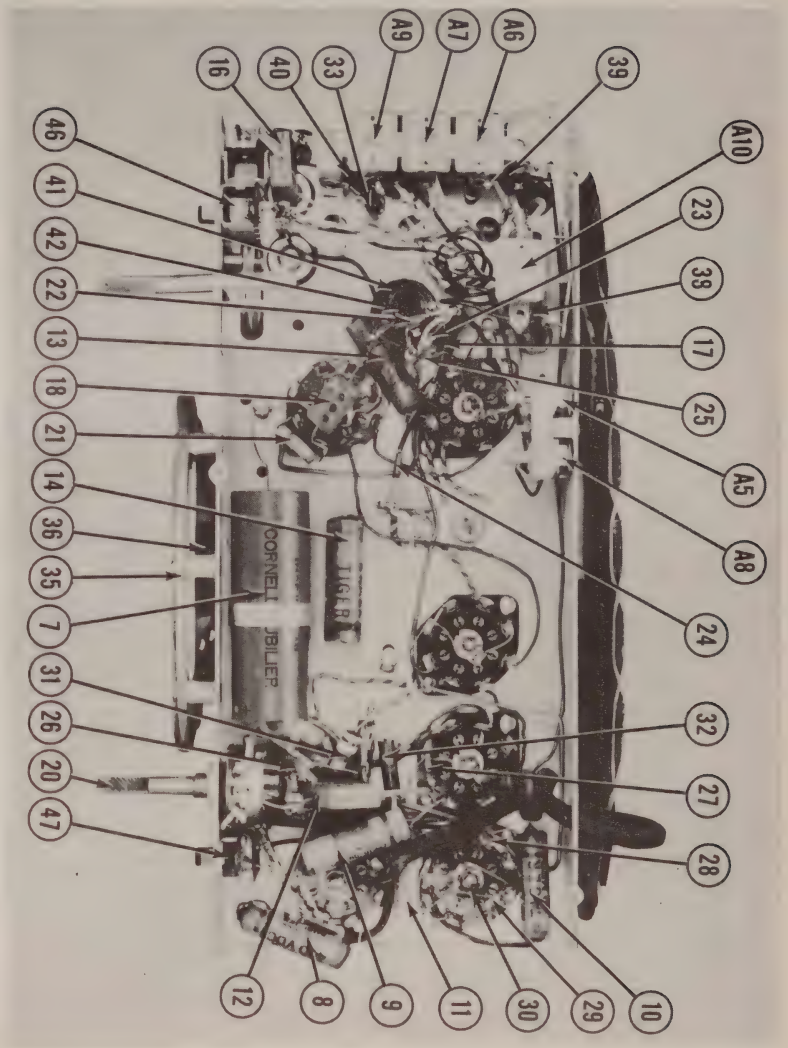
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					LINCOLN PART No.		
45	Bayonet	6-8	0.15	Brown			TS47

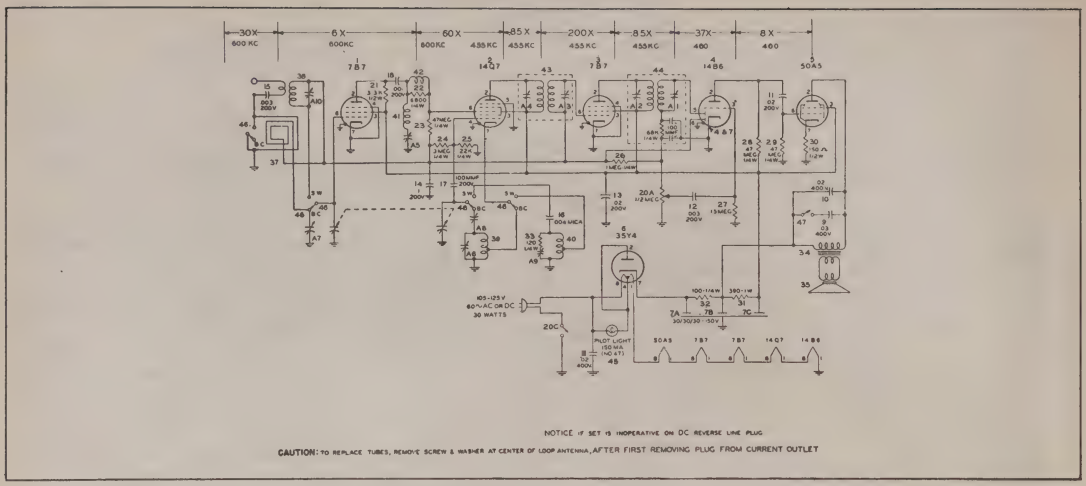
MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
19	Tun. Cap.		3 Gang Variable Main Tuning

CHASSIS—BOTTOM VIEW



SCHEMATIC DIAGRAM



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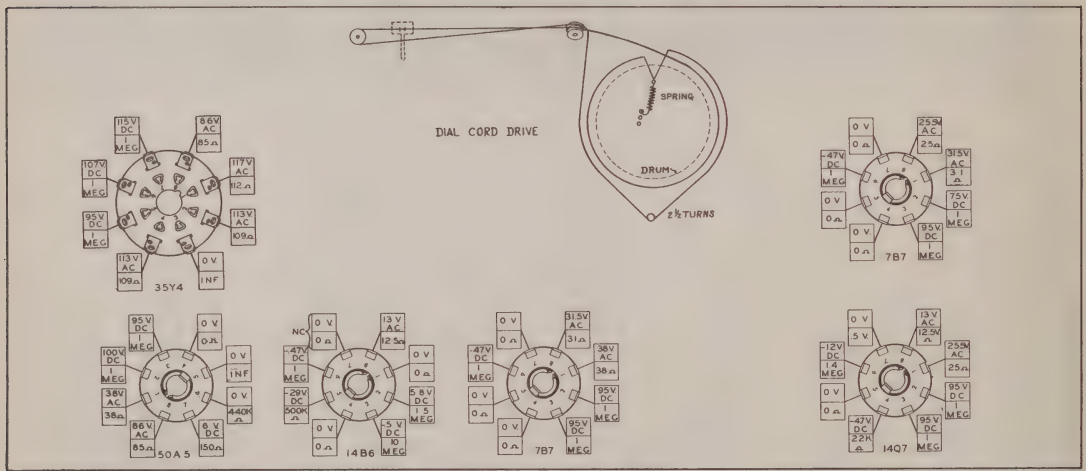
VOLTAGE AND RESISTANCE ANALYSIS CHART



1 - DC Voltage measurements are at 20,000 ohms per volt: AC Voltages measured at 1000 ohms per volt.

2 - Socket connections are shown as bottom views.

3 - Measured values are from socket pin to common negative.

4 - Line voltage maintained at 117 volts for voltage readings.

5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.

6 - Volume control at maximum, no signal applied for voltage measurements.

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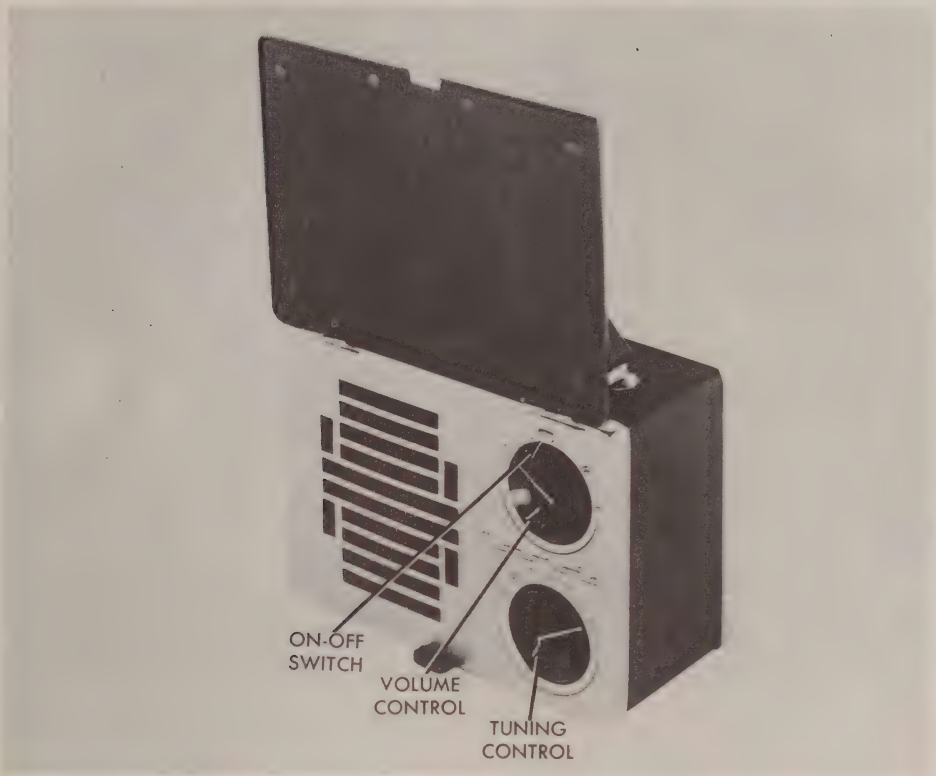
MOTOROLA
MODEL 5A1



MOTOROLA MODEL 5A1

MOTOROLA
MODEL 5A1

TRADE NAME	Motorola, Model 5A1 (Chassis HS-6)
MANUFACTURER	Galvin Mfg. Co., 4545 Augusta Blvd., Chicago, Illinois
TYPE SET	Battery Portable Superheterodyne - Self Contained Loop Antenna
TUBES (FOUR)	Types 1R5 Mixer, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3S4 Power Output
POWER SUPPLY	"A" Battery 2-1½ Volt D Cells, "B" Battery 67½ Volt Miniature
TUNING RANGE—BROADCAST	535-1600KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to ant. stator section of tuning gang. Low side to chassis.	455KC	High freq. end of dial.	Across voice coil.	A1,A2, A3.	Adjust for maximum output. Remove from case to gain access to adjustments.
"	"	1600KC	1600KC	"	A4	"
"	"	600KC	600KC	"	A5	Rock dial and adjust for maximum output.
	Loop	1400KC	Tune in 1400 KC signal.	"	A6	Adjust for maximum output. Place back in case. Remove plug in case to gain access to adjustment. Connect output of signal generator to loop of few turns of wire and radiate signal into receiver loop.

Volume control at maximum and output from signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Mixer	1R5	1R5	7AT	
2	IF Amp.	1T4	1T4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3S4	3S4	7bA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5	10	150	23A14727	TC42	M-12-150	UT-121	PRS150-12	BR1215	RF Bypass Pwr. Supp.
6	.005	100	24966-0	MT115	TTF-1-005				3S4 Plate Bypass
7	.005	100	24966-0	MT115	TTF-1-005				Audio Coupling
8	.005	100	24966-0	MT115	TTF-1-005				" "
9(A)	.02	100	178546	MT127	TTF-1-02			ZN1S2	Bypass Cap. Block
(B)	.02	100		MT127	TTF-1-02			ZN1S2	" " "
(C)	.02	100		MT127	TTF-1-02			ZN1S2	" " "
(D)	.05	100		MT135	TTF-1-05			ZN1S5	" " "
10	100	100			MMA-1-31				Audio Plate Bypass
11	100	100			MMA-1-31				RF Bypass Vol. Control

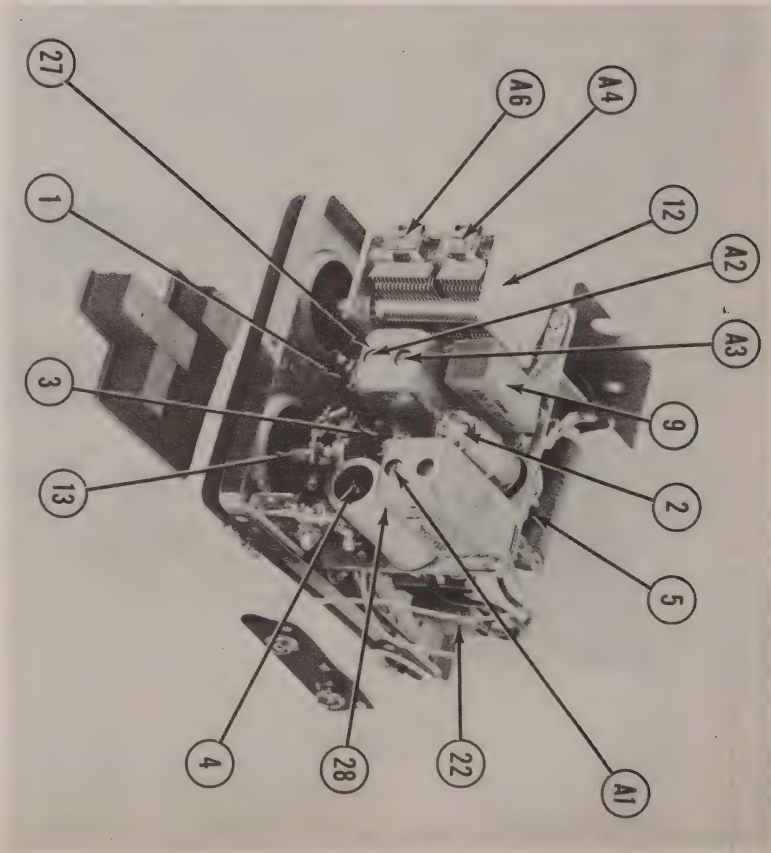
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
13(A)	1 Meg.	1	18A24918				
(B)	Shaft		Not Req.				
(C)	Switch		" "				

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
14	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Osc. Grid
15	6800Ω	½		BTS-6800	Blue-Gray-Red Screen Dropping
16	3.3 Meg.	½		BTS-3.3 Meg	Or.-Or.-Grn. AVC Network
17	4.7 Meg.	½		BTS-4.7 Meg	Yl.-Vi.-Grn. Screen Dropping
18	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
19	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. " " Plate Load
20	3.3 Meg.	½		BTS-3.3 Meg	Or.-Or.-Grn. Output Grid
21	820Ω	½		BTS-820	Gray-Red-Br. " Bias

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
22	11000Ω	3.5Ω	830Ω	1.04Ω					

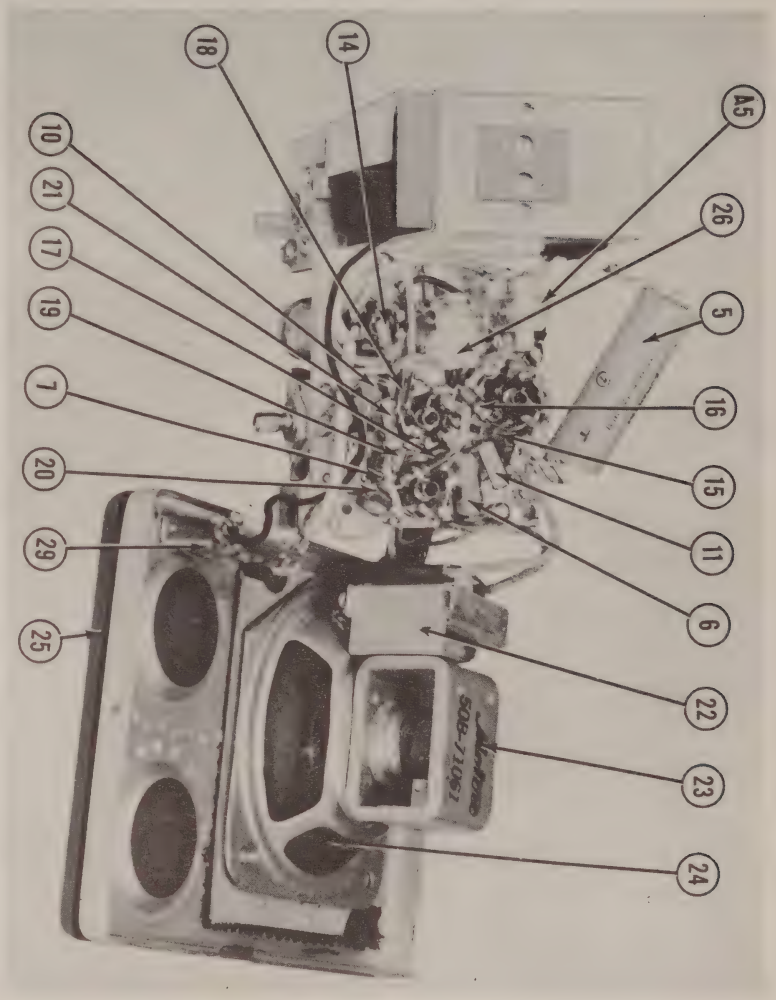
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MOTOROLA PART No.	JENSEN PART No.		
23	FIELD	VC IMP.	50B71061			
	PM	3.5Ω				
	CONE DIA.	VC DIA.				
	3-5/16"	1/2"				

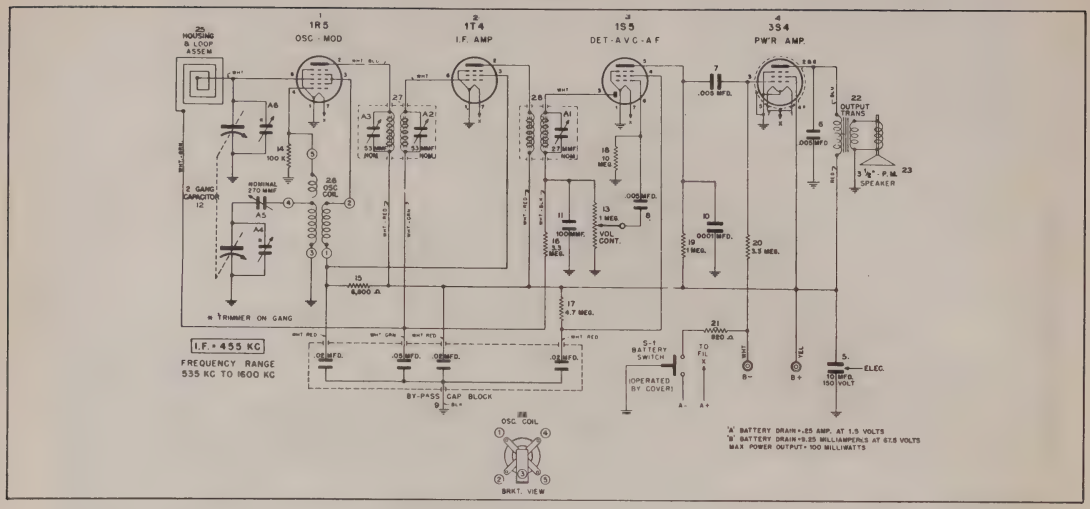
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	
25	Loop Ant.		2Ω			
26	Osc. Coil	2.5Ω	1Ω			
27	Input IF	13.5Ω	16.5Ω	1X24889		
28	Output IF	17Ω	12.5Ω	1X24886		

CHASSIS—BOTTOM VIEW

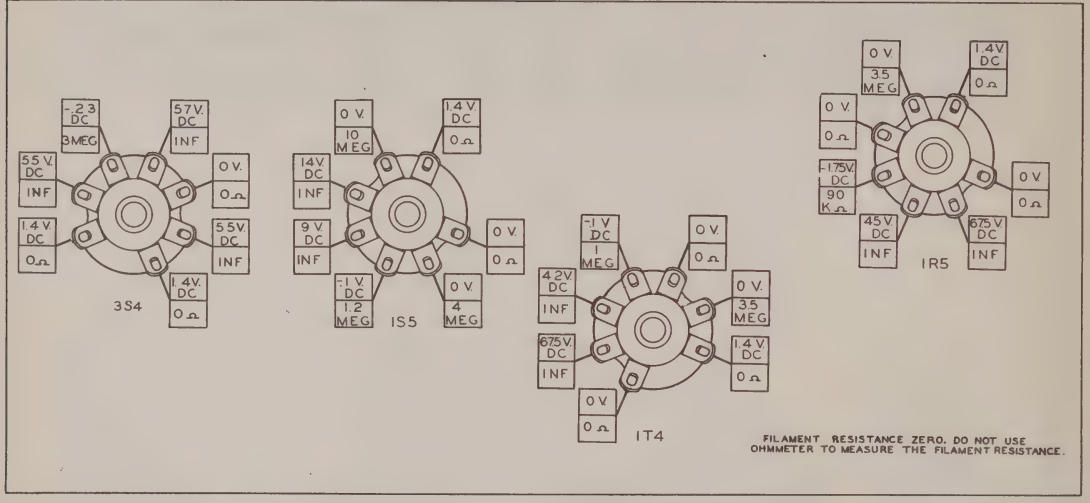


SCHEMATIC DIAGRAM



Reference stage gain measurements are not included at the request of the manufacturer.

VOLTAGE AND RESISTANCE ANALYSIS CHART


3S4
-2.3 DC 3 MEG
57 V. DC INF
55 V. DC INF
0 V. 0 Ω
1.4 V. DC 0 Ω
55 V. DC INF
1.4 V. DC 0 Ω
1S5
0 V. 10 MEG
1.4 V. DC 0 Ω
14 V. DC INF
9 V. DC INF
0 V. 0 Ω
-1 V. DC 1.2 MEG
0 V. 4 MEG
1T4
-1 V. DC 1 MEG
0 V. 0 Ω
4.2 V. DC INF
0 V. 0 Ω
675 V. DC INF
0 V. 35 MEG
0 V. 0 Ω
1.4 V. DC 0 Ω
1R5
0 V. 35 MEG
1.4 V. DC 0 Ω
0 V. 0 Ω
-1.75 V. DC 90 KΩ
0 V. 0 Ω
45 V. DC INF
675 V. DC INF
FILAMENT RESISTANCE ZERO. DO NOT USE OHMMETER TO MEASURE THE FILAMENT RESISTANCE.

1 - DC Voltage measurements are at 20,000 ohms per volt.

2 - Socket connections are shown as bottom views.

3 - Measured values are from socket pin to ground.

4 - Plate supply voltage maintained at 67.5 volts; filament voltage 1.4 volts for voltage readings.

5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.

6 - Volume control at maximum, no signal applied for voltage measurements.

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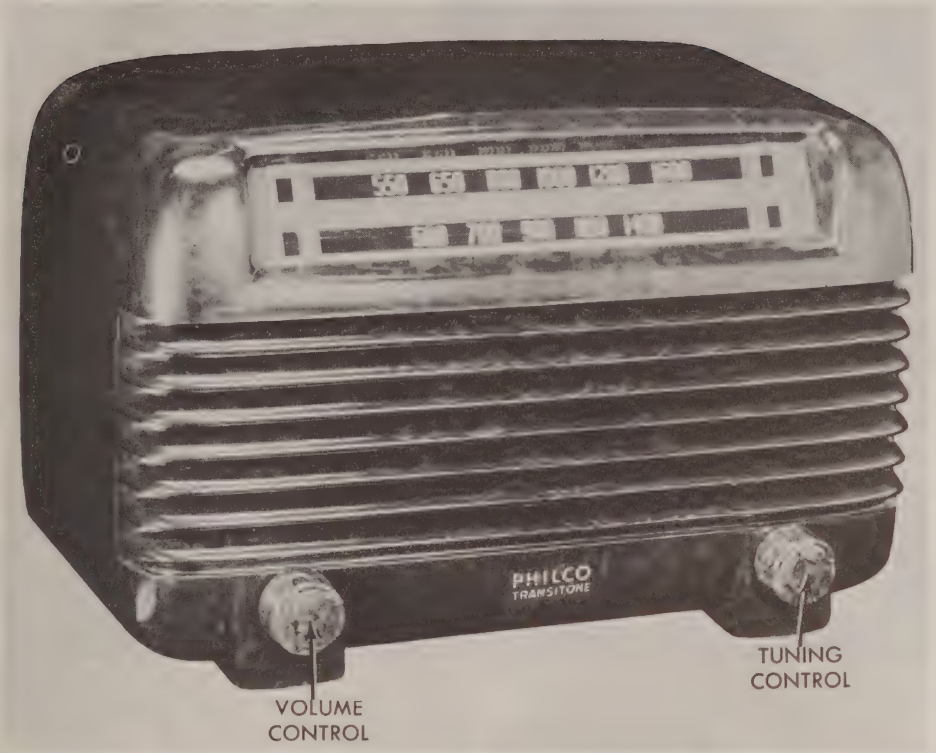
PHILCO MODELS
46-250, 46-250-I, 46-251



PHILCO MODEL 46-250

PHILCO MODELS
46-250, 46-250-I, 46-251

TRADE NAME	Philco, Models 46-250, 46-250-I, 46-251
MANUFACTURER	Philco Radio & Television Corp., Tioga & C Sts., Philadelphia, Pa.
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES(FIVE)	Types 7A8 Converter, 7B7 IF Amp., 7C6 2nd Det.-1st AF, 50L6GT Power Output, 35Z5GT/G Rectifier.
POWER SUPPLY	105-120 Volts AC-DC Rating .240 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620 KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
100 MMFD	High side to ant. stator section of tuning gang. Low side to B-.	455KC	540KC	Connect to left and center lugs on term. strip at rear of chassis.	A1,A2, A3,A4.	Turn tuning condenser plates to full mesh position. Make sure dial pointer is set to index mark (small dot stamped on dial to the left or below "55"). This is 540KC. Turn A4 down tight and adjust in order given for maximum output. A4 is last adjustment, do not leave it turned tight.
"	High side to ant. lead. Low side to B-.	1600KC	1600KC	"	A5	Adjust for maximum output.
"	"	1500KC	1500KC	"	A6	" " " "

Volume control at maximum and output from signal generator no higher than necessary to obtain output reading. Use isolation transformer if available. If not, use isolating capacitor between signal generator ground lead and receiver B-.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
1	Converter	7A8	7A8	8U	
2	IF Amp.	7B7	7B7	8V	
3	2nd Det.-AVC-1st AF	7C6	7C6	8W	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
6(A)	20	150	30-2547	2N509	M-2x20-150	TA-220	PRSA150-20-20	BRD2215	Filter - Red
(B)	20	150							" - Orange
7	.04	400	30-4119	TP425	S-6-04	TC-14	484-.04	DT4S4	Line Filter
8	.02	600	30-4599	TP412	S-4-02	TC-12	684-.02	DT6S2	50L6 Plate Bypass
9	.01	600	61-0120	TP410	S-6-01	TC-11	684-.01	DT6S1	Audio Coupling
10	.01	600	61-0120	TP410	S-6-01	TC-11	684-.01	DT6S1	" "
11	.05	400	30-4518	TP426	S-4-05	TC-15	484-.05	DT4S5	Screen Bypass
12	.2	400	76-1161	TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolating Trap†
13	.1	200	30-4527	TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
14	.0015	600	30-4621	TP405	S-6-002	TC-22	684-.002	DT6D2	Ant. Coupling
15	250	500	601024530†	M0240	M0.5-325	1FM-325	1468-.00025	5W5T25	Grid Bypass
16	50	500	600061530†	M0225	M0.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Grid Cond.

† When using Mallory, Solar, Sprague, Aerovox or Cornell Dubilier replacement inductance on end of capacitor as employed on original. rewind

RESISTORS

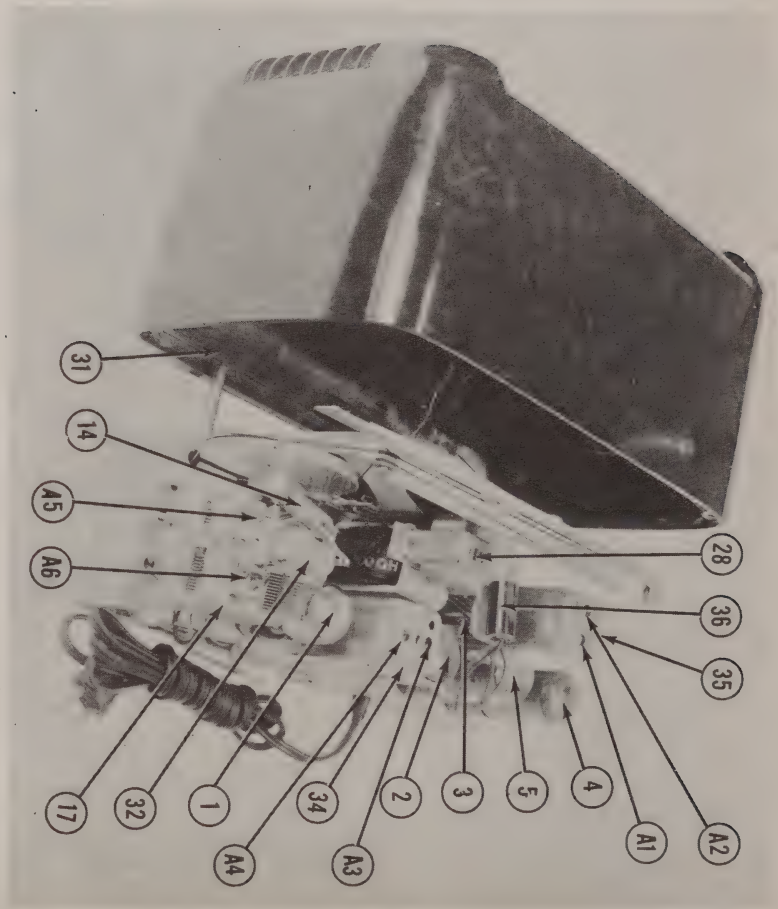
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	
19(A)	47KΩ	½	66-3473340	BTS-47K	Yl.-Vl.-Or. Osc. Grid*
(B)	220KΩ	½		BTS-220K	Br.-Red-Yl. " " ††
20	27KΩ	1	66-3273340	BTA-27K	Red-Vl.-Or. Screen Dropping
21	2.2 Meg.	½	66-5223340	BTS-2.2 Meg	Red-Red-Grn. AVC Network
22	3.3 Meg.	½	66-5333340	BTS-3.3 Meg	Or.-Or.-Grn. 1st AF Grid
23	470KΩ	½	66-4473340	BTS-470K	Yl.-Vl.-Yl. 1st AF Plate Load
24	470KΩ	½	66-4473340	BTS-470K	Yl.-Vl.-Yl. Output Grid
25	130	½	66-1133340	BW-½-130	Br.-Or.-Br. Output Cathode
26	120K	½		BTS-120K	Br.-Red-Yl. Line Isolating
27	80Ω	10	33-3425	AB-75	Line Dropping

*Used in early production.
††Used in later production.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
18(A)	500KΩ	1	33-5429	MR46	D13-133	M-60-Z	Volume Control
(B)	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 18A per instructions.
(C)	Switch		" "	M26	41	SW-A	" " " " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
28	2390Ω	3.92Ω	170Ω	.42Ω	Part of 36-1591	A-3476	T-14382		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			PHILCO PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
29	520Ω	3.92Ω	36-1591	NONE		
	CONE DIA.	VC DIA.				
30	6"x4"	$\frac{1}{2}$"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	PHILCO PART No.	MEISSNER PART No.	
31(a)	Loop Ant.	3Ω		32-4057		Used in 46-250, 46-250-I
(b)	"			32-4061		" " 46-251
32	Ant. Coil	35Ω	.8Ω	32-3394		
33	Osc. Coil	2.5Ω	7.5Ω	32-3880	14-1040	
34	Input IF	25Ω	25Ω	32-3968	16-6658	
35	Output IF	22Ω	22Ω	32-3604	16-6670	

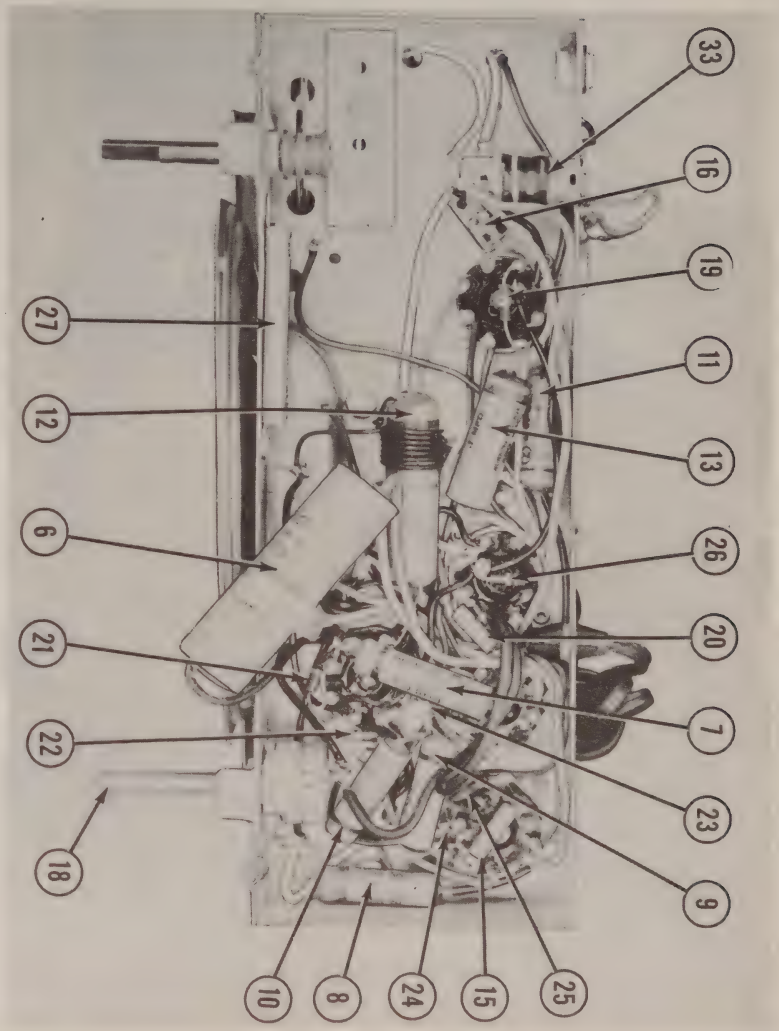
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					PHILCO PART No.		
36	Bayonet	6-8	0.15	Brown	34-2066		Type 47

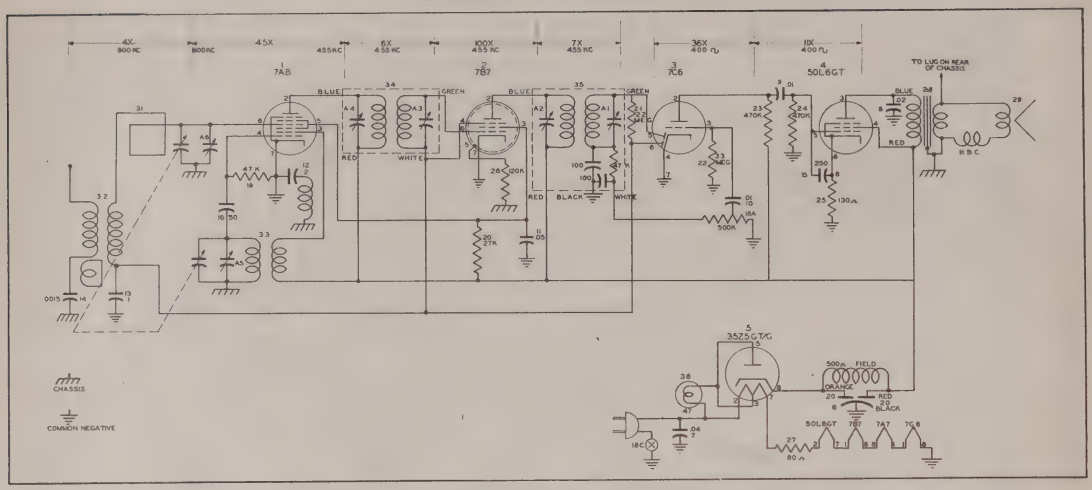
MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
17	Tuning Cap.	31-2659	2 Section Variable Main Tuning
A5	Trimmer		Oscillator, Part of 31-2659
A6	"		Antenna, " " "
	Dial Scale	27-5679	Used on 46-250
	" "	27-5695	" " 46-250-I
	" "	27-5844	" " 46-251
	Pointer	56-2076FCP	
	Spring, Pointer	28-8954	
	" Tun.	56-3167	Tuning Capacitor Drive Cord
	Knob, Assby.	54-4052	Used on 46-250
	" "	27-4805	" " 46-250-I
	" "	54-4137	" " 46-251

CHASSIS—BOTTOM VIEW

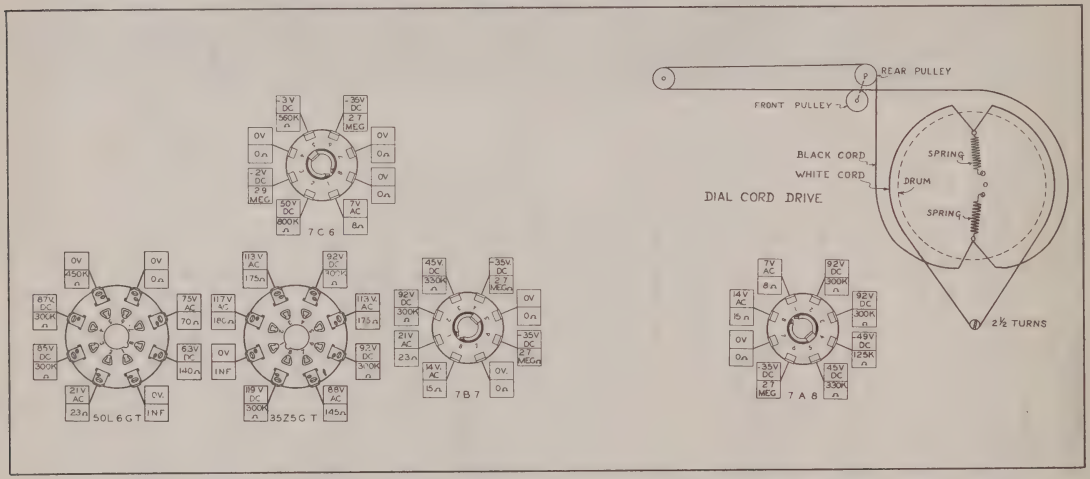


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1 - DC Voltage measurements are at 20,000 ohms per volt: AC Voltages measured at 1000 ohms per volt.

2 - Socket connections are shown as bottom views.

3 - Measured values are from socket pin to common negative.

4 - Line voltage maintained at 117 volts for voltage readings.

5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.

6 - Volume control at maximum, no signal applied for voltage measurements.

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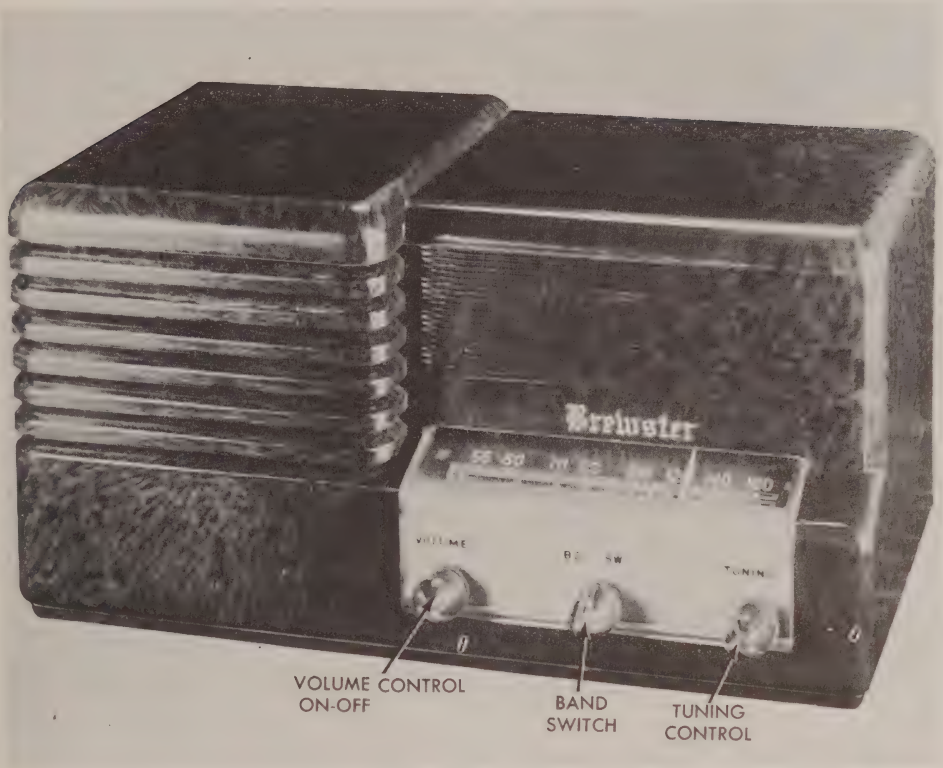
BREWSTER
MODELS 9-1084, 9-1085, 9-1086



BREWSTER MODEL 9-1086

TRADE NAME	Brewster, Models 9-1084 9-1085, 9-1086
MANUFACTURER	Meissner Mfg. Div., Maguire Industries Inc., Mt. Carmel, Illinois
TYPE SET	AC - DC 2 Band Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types 12SK7GT RF Amp., 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.,-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC Rating .240 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	530-1600KC SHORT WAVE 6-18 MC

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05MFD	High side to signal grid (pin #8) of 12SA7. Low side to B-.	455KC	BC	Low freq. end of dial.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
"	High side to ant. stator section of tuning gang. Low side to B-.	455KC	"	"	"	A5	Adjust for minimum output. Use isolating instruction given for IF's.
200 MMFD	High side to ext. ant. lead. Low side to B-.	1400KC	"	1400KC	"	A6,A7	Adjust for maximum output.
"	"	600KC	"	Approx. 600KC	"	A8	Adjust for maximum output while rocking dial. Recheck A6 and A7 at 1400KC.
400Ω res.	"	16MC	SW	16MC	"	A9,A10	Adjust for maximum output.

Volume control at maximum and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: BREWSTER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7GT	12SK7GT	8N	
2	Converter	12SA7GT	12SA7GT	8AD	
3	IF Amp.	12SK7GT	12SK7GT	8N	
4	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BREWSTER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7(A)	80	150	27145	FP357*	DY-3x40-150*	EL-340*	AF888D*	UP6CJ44*	■Filter
(B)	40	150							▲ "
8	.05	400	14181	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
9	.002	600	16133	TP405	S-6-002	TC-22	684-.002	DT6D2	RF Bypass Rect.
10	.01	400	14110	TP421	S-4-01	TC-11	484-.01	DT4S1	35L6 Plate Bypass
11	.02	200	27160	TP423	S-4-02	TC-12	484-.02	DT4S2	Audio Coupling
12	.1	400	15143	TP428	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Pwr. Supp.
13	.002	600	16133	TP405	S-6-002	TC-22	684-.002	DT6D2	Audio Coupling
14	.05	200	14160	TP426	S-4-05	TC-15	484-.05	DT4S5	IF Cath. Bypass
15	.05	200	14160	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
16	.05	400	14181	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Isolating
17	.05	400	14181	TP426	S-4-05	TC-15	484-.05	DT4S5	" "
18	.05	200	14160	TP426	S-4-05	TC-15	484-.05	DT4S5	RF Cath. Bypass
19	250	500	14102	MC240	MO.5-325	1FM325	1468-.00025	SW5T25	RF Bypass Vol. Cont.
20	100	500	14101	MC235	MO.5-31	1FM-31	1468-.0001	SW5T1	Audio Plate Bypass
21	100	500	14101	MC235	MO.5-31	1FM-31	1468-.0001	SW5T1	Fixed wave Trap Cond.
22	250	500	14102	MC240	MO.5-325	1FM-325	1468-.00025	SW5T25	Osc. Grid Cond.
23	250	500	27151	MCB240	MOS.5-325	MS-33	1469-.0002	SR5T25	Fixed Pad B.C.
24	3600	500	27150	MCB463	MWS.5-24	MS-24	1464-.004	UDR5D4	" " S.W.
25	500	500	14139	MC245	MO.5-35	1FM-35	1468-.0005	SW5T5	RF Coupling
26	500	500	14139	MC245	MO.5-35	1FM-35	1468-.0005	SW5T5	Ant. Coupling

* Parallel Two Sections, Use Insulated Cover.

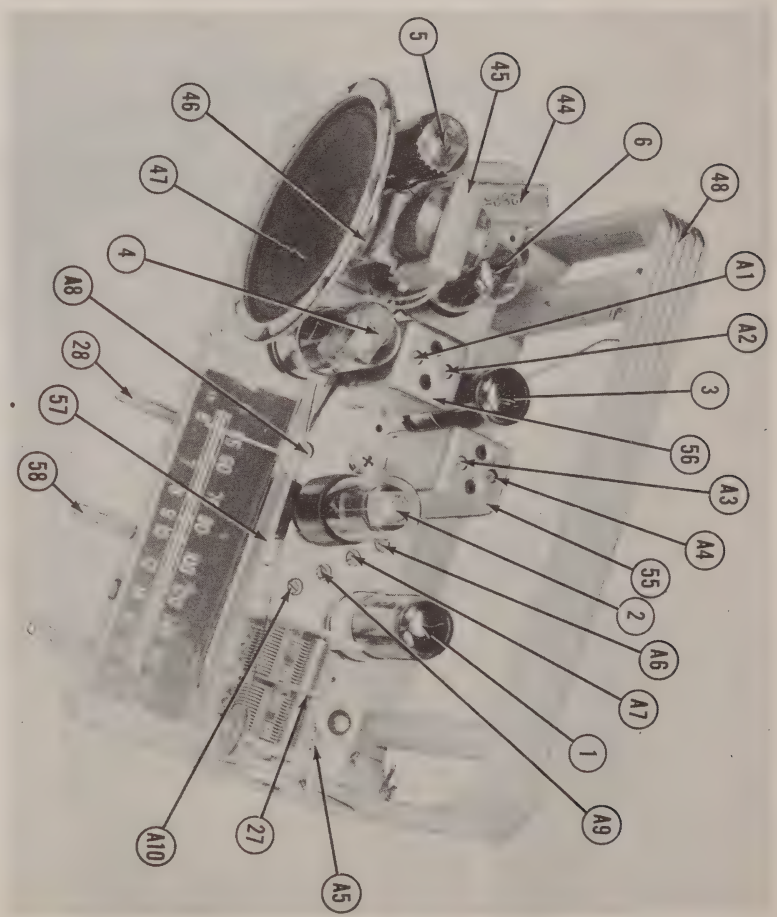
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BREWSTER PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
28(A)	500KΩ	1	28237	MK401	D13-133	AM-60-Z	Volume Control
(B)	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 28A per instructions
(C)	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BREWSTER PART No.	IRC PART No.	IDENTIFICATION CODES
29	1 Meg.	½	17144	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
30	100Ω	½	17114	BW-½-100	Br.-Blk.-Br. RF Cathode
31	3300Ω	½	27163	BTS-3300	Or.-Or.-Red RF Plate Load
32	470KΩ	½	27155	BTS-470K	Yl.-Vi.-Yl. Converter Grid
33	22KΩ	½	27153	BTS-22K	Red-Red-Or. Osc. Grid
34	100Ω	½	17114	BW-½-100	Br.-Blk.-Br. IF Cathode
35	1 Meg.	½	17144	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
36	10 Meg.	½	18124	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
37	330KΩ	½	27154	BTS-330K	Or.-Or.-Yl. 1st AF Plate Load
38	470KΩ	½	27155	BTS-470K	Yl.-Vi.-Yl. Output Grid
39	180Ω	½	27159	BW-½-180	Br.-Gray-Br. Output Cathode
40	390Ω	½	27152	BW-½-390	Or.-Wh.-Br. Pilot Light Shunt
41	27Ω	½	27157	BW-½-27	Red-Vi.-Blk. Rectifier Ballast
42	1 Meg.	½	17144	BTS-1 Meg.	Br.-Blk.-Grn. IF Grid Shunt
43	220KΩ	½	RC20AE224M	BTS-220K	Red-Red-Yl. Line Isolating

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: DC RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000~)	REPLACEMENT DATA: BREWSTER PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: THORDARSON PART NO.
44	66MA	130Ω	2.4H	28250	C-1080	T-14C61

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: BREWSTER PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.		INSTALLATION NOTES
45	1520Ω	3.18Ω	108Ω	.74Ω	Part of 28257	A-38761	T-14S821		†File out mounting holes, bend mounting tabs down and mount on the original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: BREWSTER PART No.	REPLACEMENT DATA: JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.				
46	PM	3.1Ω	28257	ST-106		
	CONE DIA.	VC DIA.				
47	4-13/16"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: BREWSTER PART No.	REPLACEMENT DATA: MEISSNER PART No.	INSTALLATION NOTES
48	Loop Ant.	.5Ω	0Ω	04073		
49	BC Ant. Coil	.5Ω	3Ω	04C15	14-1026	
50	SW Ant. Coil		0Ω	04072	14-1046	
51	Peaking Coil	1Ω		04014		
52	Wave Trap	12Ω		04013		
53	BC Osc. Coil		5.3Ω	04017	14-1040	
54	SW Osc. Coil	.2Ω	.1Ω	04016	14-1044	
55	Input IF	24Ω	24Ω	04011	16-6658	
56	Output IF	20Ω	20Ω	04012	16-6660	

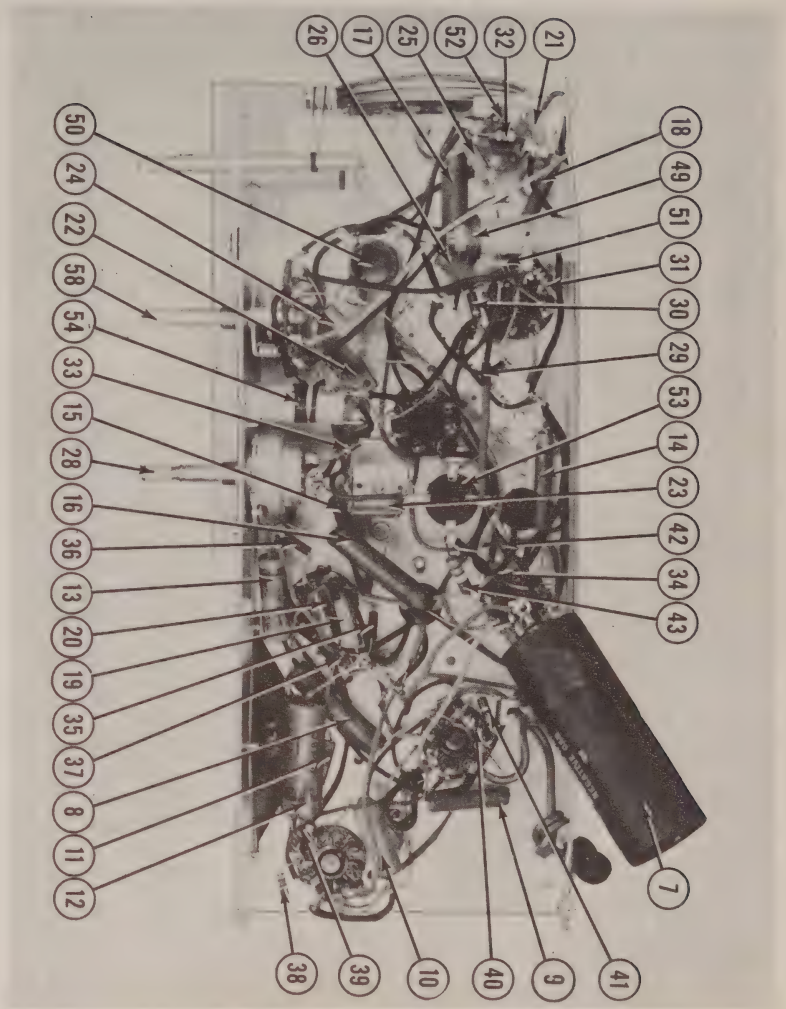
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: BREWSTER PART No.	REPLACEMENT DATA	INSTALLATION NOTES
57	Bayonet	6-8	0.15	Brown	19711		#47

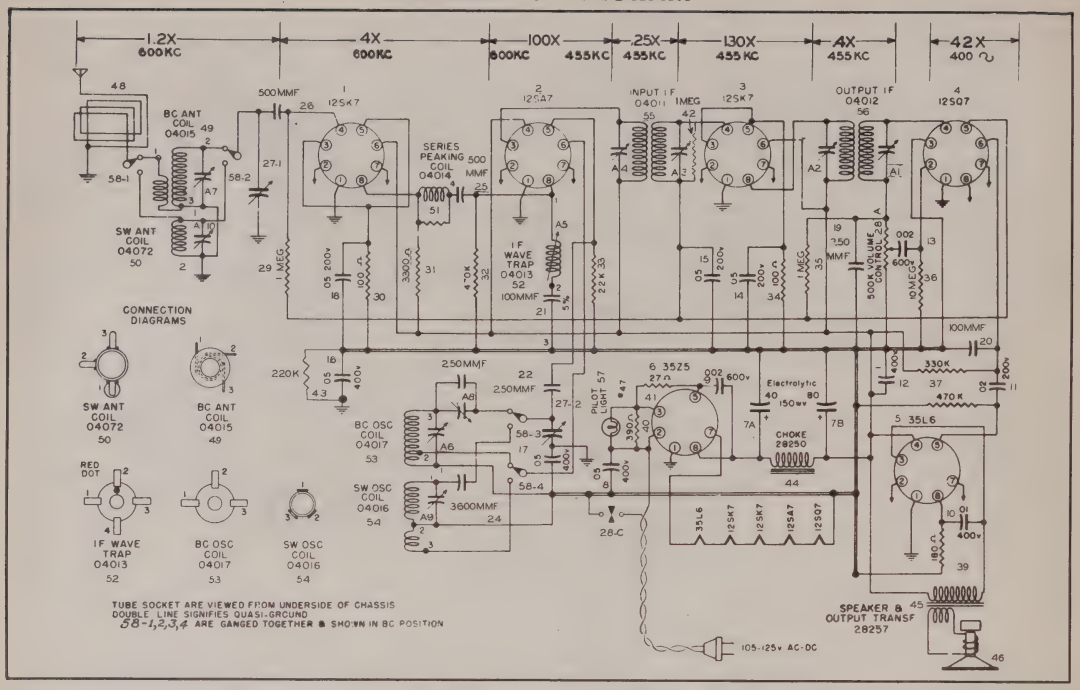
MISCELLANEOUS

ITEM No.	PART NAME	BREWSTER PART No.	NOTES
27	Tuning Cap.	27146	2 Gang Variable Main Tuning
58	Band Switch	28238	
A6	Trimmer	17055	Broadcast Oscillator
A7	"		" Antenna (Part of 17055)
A8	"	17054	" Padder
A9	"		Short Wave Oscillator (Part of 17055)
A10	"		" " " " " "
	Dial Scale	04019	

CHASSIS—BOTTOM VIEW

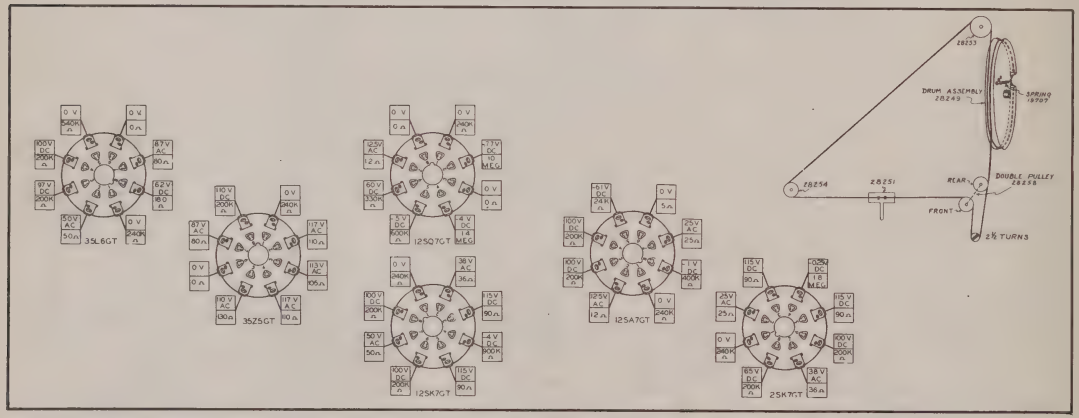


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for average operative stages, rather than absolute values. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3 volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1. DC voltage measurements are at 20,000 ohms per volt; AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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SETCHELL CARLSON
MODEL 416

SETCHELL CARLSON MODEL 416

SETCHELL CARLSON
MODEL 416

TRADE NAME	Setchell Carlson, Model 416
MANUFACTURER	Setchell Carlson Inc., 2233 University Ave., St. Paul 4, Minn.
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE)	Types 12SA7GT Converter, 12SK7 IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	115 Volts AC-DC Rating .260 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	538-1600KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05MFD	High side to ant. stator section of tuning gang. Low side to chassis.	465KC	Point of no interfering signal.	Across voice coil.	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and receiver chassis. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
200 MMFD	High side to ext. ant. clip. Low side to chassis.	1500KC	1500KC	"	A5	Adjust for maximum output.
"	"	1000KC	1000KC	"	A6	" " " "

Check dial pointer with gang fully closed. Position dial pointer over 538KC. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: SETCHELL CARLSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SETCHELL CARLSON PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6(A)	50	150		FP214	DY-2x50-150	EL-25	AF1010D	UP6BJ34	▪ Filter
(B)	50	150							■ "
7	.05	400		TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
8	.02	400		TP423	S-4-02	TC-12	484-.02	DT4S2	50L6 Plate Bypass
9	.01	400		TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
10	.006	400		TP409	S-6-006	TC-26	484-.006	DT6D6	" "
11	.05	200		TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
12	250	500		MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	RF Bypass Diode

CONTROLS

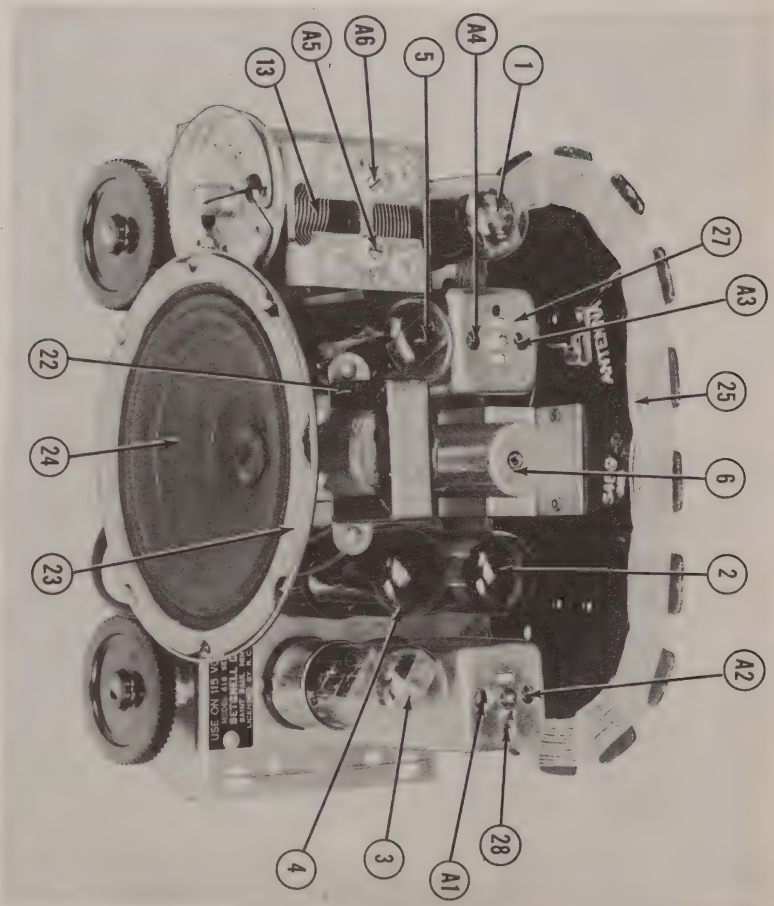
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SETCHELL CARLSON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
14(A)-1	250K	1		MR44	D13-130	M-64-Z	Used in later production*
14(A)-2	500K	1		MR43	D13-133	M-60-Z	Used in early production*
(B)	Shaft			Not Req.	A	Not Req.	Attach to 14A per instructions
(C)	Switch			M26	41	SW-A	" " " " "

*Use original mounting nut.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SETCHELL CARLSON PART No.	IRC PART No.	IDENTIFICATION CODES
15	25KΩ	1/3		BTS-25K	Red-Grn.-Or. Osc. Grid
16	5 Meg.	1/3		BTS-5 Meg.	Grn.-Blk.-Grn. AVC Network
17	5 Meg.	1/3		BTS-5 Meg.	Grn.-Blk.-Grn. 1st AF Grid
18	200KΩ	1/3		BTS-200K	Red-Blk.-Yl. 1st AF Plate Load
19	500KΩ	1/3		BTS-500K	Grn.-Blk.-Yl. Output Grid
20	150Ω	1/2		BW-½-150	Br.-Grn.-Br. Output Cathode
21	1200Ω	1		BW-1-1200	Br.-Red-Red Filter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SETCHELL CARLSON PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
22	2375Ω	2.9Ω	132Ω	1Ω		A-3876	T-14S82		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SETCHELL CARLSON PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
23	PM	2.8Ω		ST-106#		#Fabricate new mounting bracket.
	CONE DIA.	VC DIA.				
24	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

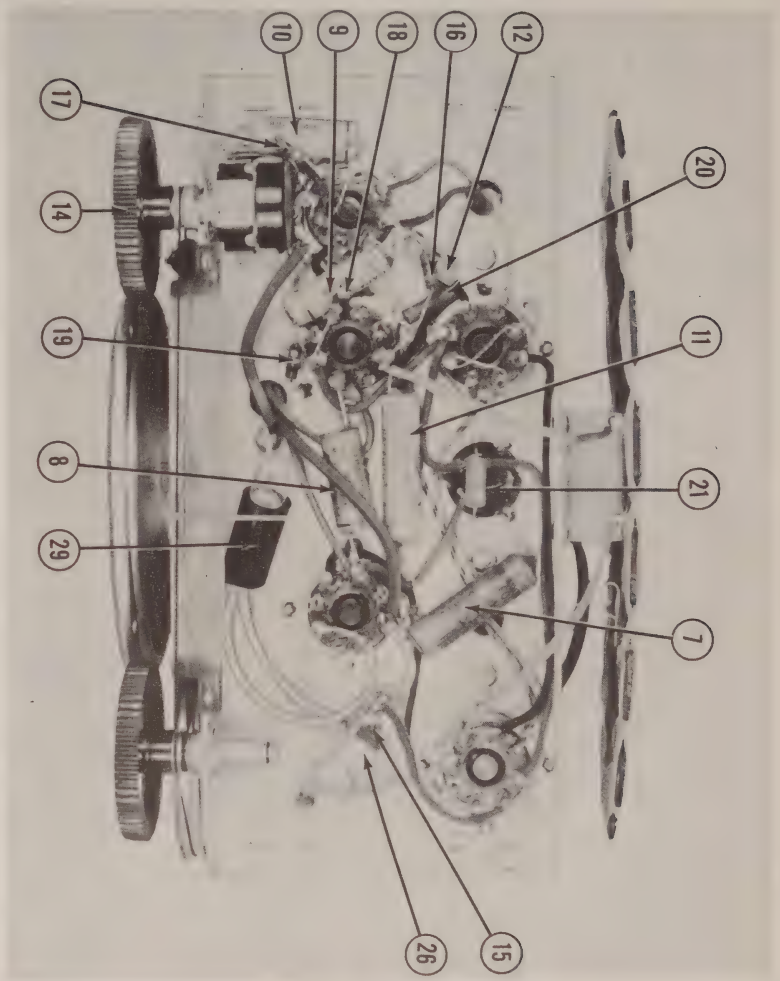
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	SETCHELL CARLSON PART No.	MEISSNER PART No.	
25	Loop Ant.		1Ω	S46-9		
26	Osc. Coil		4Ω		14-1040	Install 50MMFD from osc. grid to lug 1 on coil.
27	Input IF	24Ω	19Ω	X601	16-6658	
28	Output IF	19Ω	17Ω	X601A	16-6660	

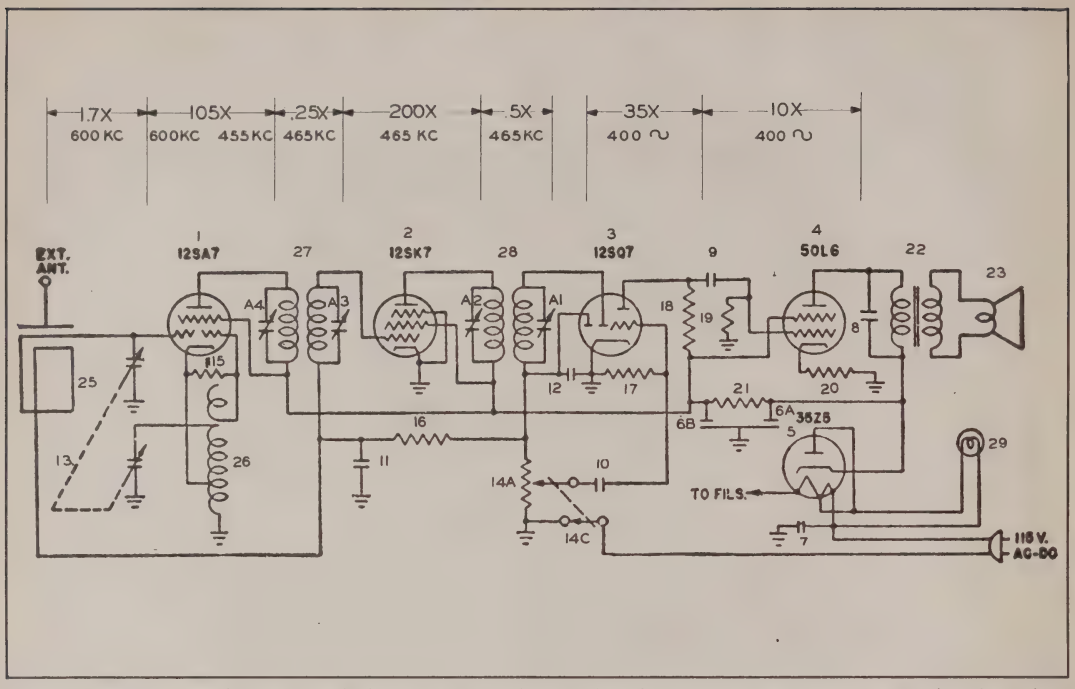
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					SETCHELL CARLSON PART No.		
29	Bayonet	6-8	0.25	Blue	Pb1		Type 44

CHASSIS—BOTTOM VIEW

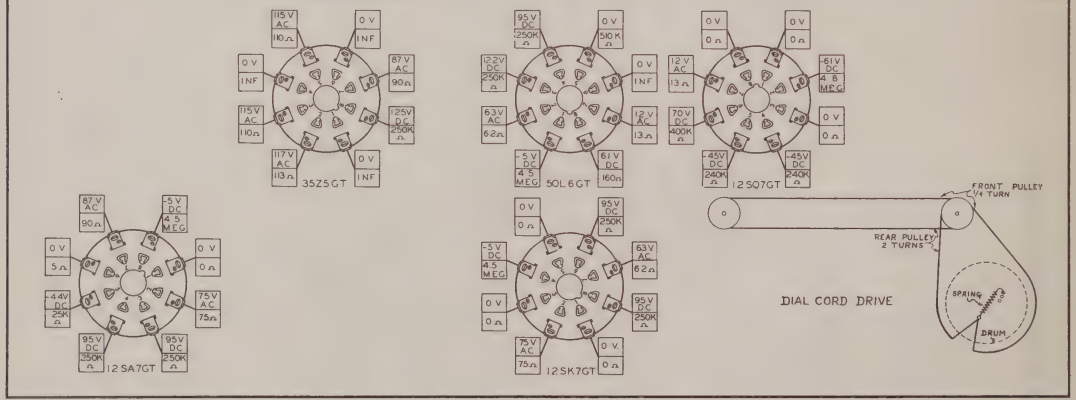


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for average operative stages, rather than absolute values. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3 volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1. DC voltage measurements are at 20,000 ohms per volt; AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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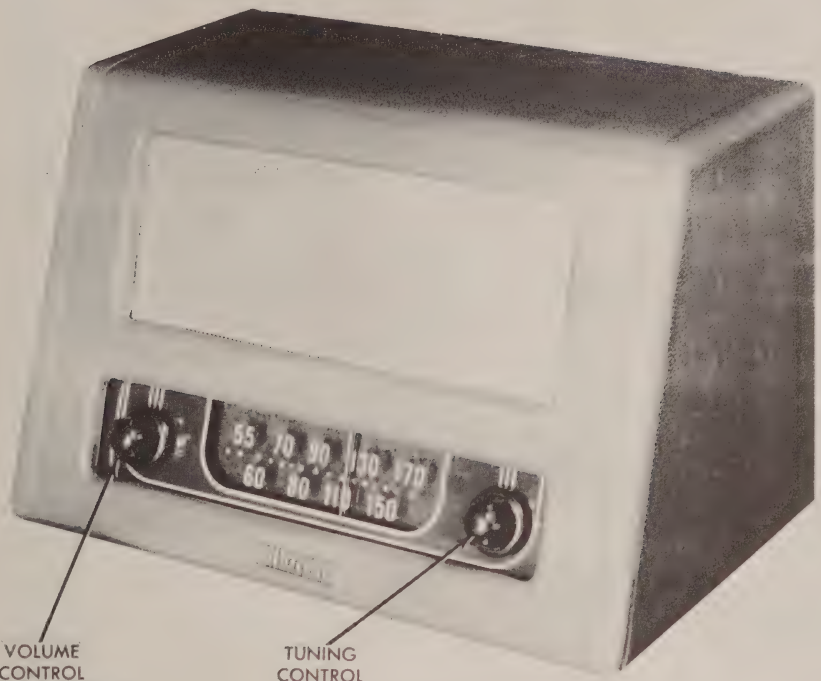


MURPHY MODEL 122

TRADE NAME	Murphy, Model 122
SUPPLIER	G. C. Murphy Co. 531 5th Ave., McKeesport, Pa.
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE)	Types 14Q7 Converter, 12SK7GT IF Amp., 12SQ7 Det.-AVC-AF, 50B5 Power Output, 35Z5GT Rectifier.
POWER SUPPLY	117 Volts AC-DC Rating .235 Amp. @ 117V. AC
TUNING RANGE—BROADCAST	530-1700KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to ant. stator section of tuning gang. Low side to B-.	455KC	High freq. end of dial.	Across voice coil	A1, A2, A3, A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and receiver B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
200MMFD	High side to ant. (blue) lead. Low side to B-.	1600KC	1600KC	"	A5	Adjust for maximum output.
"	"	1400KC	Tune in 1400 KC signal.	"	A6	" " " "
						Check sensitivity at 600KC and repeat adjustments A5,A6 if necessary.

Volume control at maximum volume and output from signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

CUT ON THIS LINE—MOISTEN EDGE—AND APPLY TO PROPER FOLDER

MURPHY - Model 112

Page 1 - Identification should be Model 122.

MURPHY MODEL 112

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		MURPHY PART No.	STANDARD REPLACEMENT		
1	Converter	14Q7	14Q7	8AL	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	2nd.Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50B5	50B5	7BZ	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MURPHY PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
6(A)	20	150		TN129	M-2x20-150	TA-220	PRS150-20-20	EZ42215	Filter - Red
(B)	20	150							" - Green
(C)	20	150			M-20-150	UT-201	PRS150-20		" - Blue
7	.05	400		TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
8	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolating
9	.005	300		TP408	S-6-005	TC-25	684-.005	DT6D5	50B5 Plate Feedback
10	.006	300		TP409	S-6-006	TC-26	684-.006	DT6D6	Audio Coupling
11	.0025	600		TP406	S-6-003	TC-23	684-.003	DT6D3	" "
12	.05	400		TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
13	.02	400		TP423	S-4-02	TC-12	484-.02	DT4S2	Ant. Coupling
14	220	500		MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	RF Bypass Diode

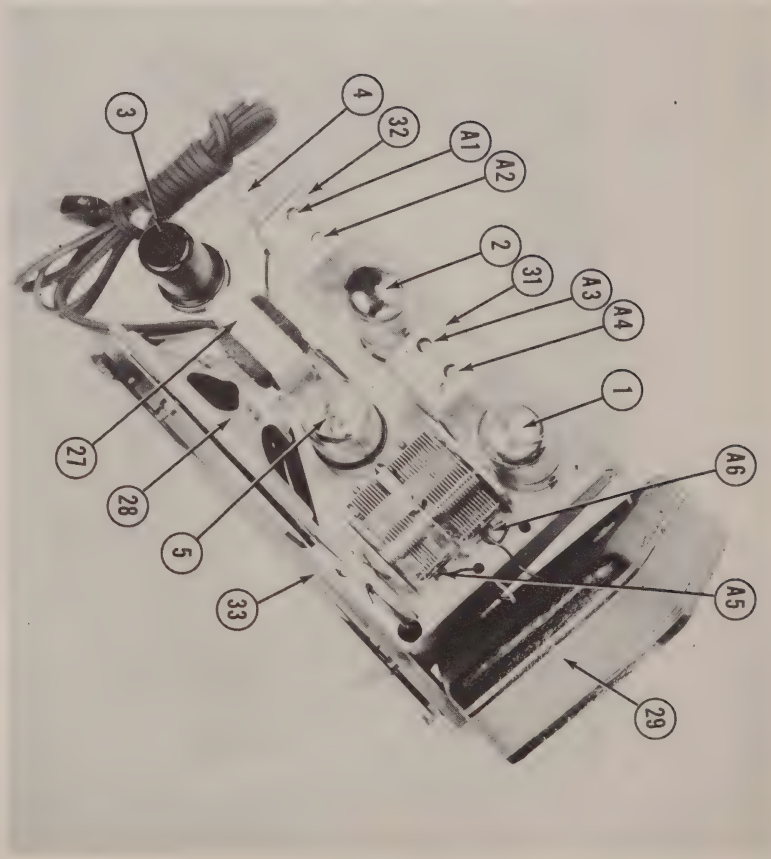
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	MURPHY PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
15(A)	500KΩ	1	664	MR48*	D13-133*	M-60-Z*	*See Installation Note 1
(B)	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 15A per instructions
(C)	Switch		" "	M26	41	SW-A	" " " "
	Installation		Note 1 - Install a 47KΩ resistor in series with the right hand terminal of the original control (control viewed from shaft side, terminals down).				

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MURPHY PART No.	IRC PART No.	
16	22KΩ	½		BTS-22K	Red-Red-Or. Osc. Grid
17	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
18	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
19	220KΩ	½		BTS-220K	Red-Red-Yl. 1st AF Plate Load
20	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
21	3300Ω	½		BTS-3300	Or.-Or.-Red Audio Feedback
22	150	½		BW-½-150	Br.-Grn.-Br. Output Cathode
23	1500	½		BTS-1500	Br.-Grn.-Red Filter
24	150	1		BW-1-150	Br.-Grn.-Br. Filter
25	15	½		BW-½-15	Br.-Grn.-Blk. Surge Limiting
26	220KΩ	½		BTS-220K	Red-Red-Yl. Line Isolating

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MURPHY PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
27	1050Ω	3.2Ω	98Ω	.52Ω	TA-160	A-3865†	T-14S82†		†Bend mounting tabs down; file out mounting holes and mount by original mounting bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MURPHY PART No.	JENSEN PART No.		
28	FIELD RES. / PM	VC IMP. / 3.2Ω	A-SP.1	ST-105#		#Drill holes in front of chassis and mount speaker by the lip holes.
	CONE DIA. / 4-5/8"	VC DIA. / 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

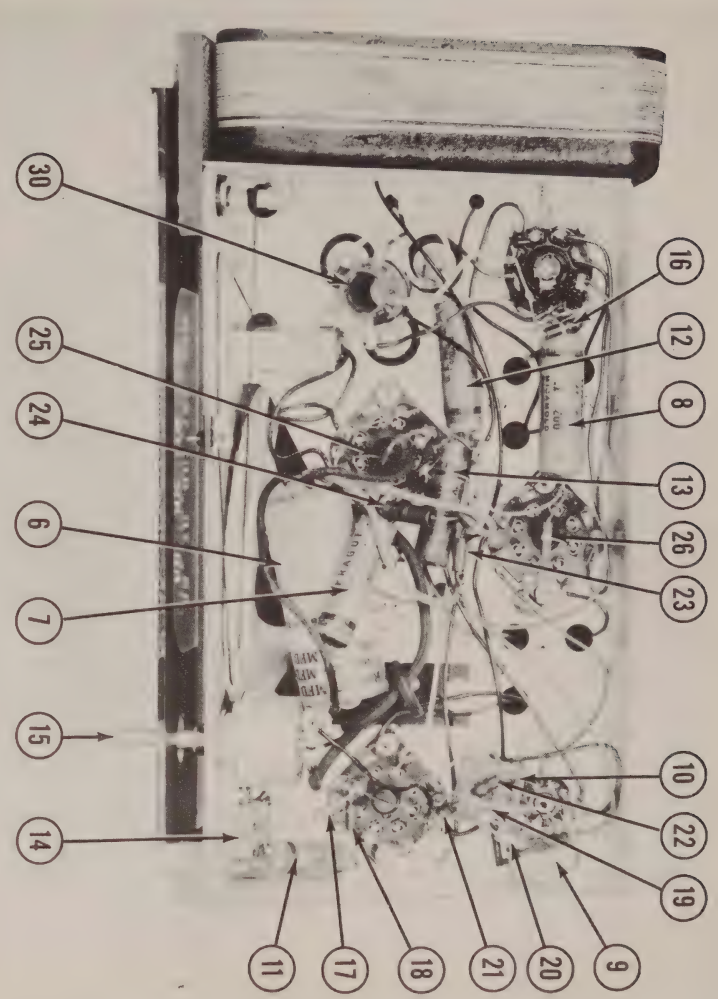
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	MURPHY PART No.	MEISSNER PART No.	
29	Loop Ant.	.2Ω	1.2Ω	A-LF-1		
30	Osc. Coil	.5Ω	6Ω	A-LC-1	‡14-1040	‡Add 50 MMFD capacitor between osc. grid and lug No. 1 of coil.
31	Input IF	21Ω	21Ω	A-LF-1	16-6658	
32	Output IF	16.5Ω	16.5Ω	A-LF-2	16-6660	

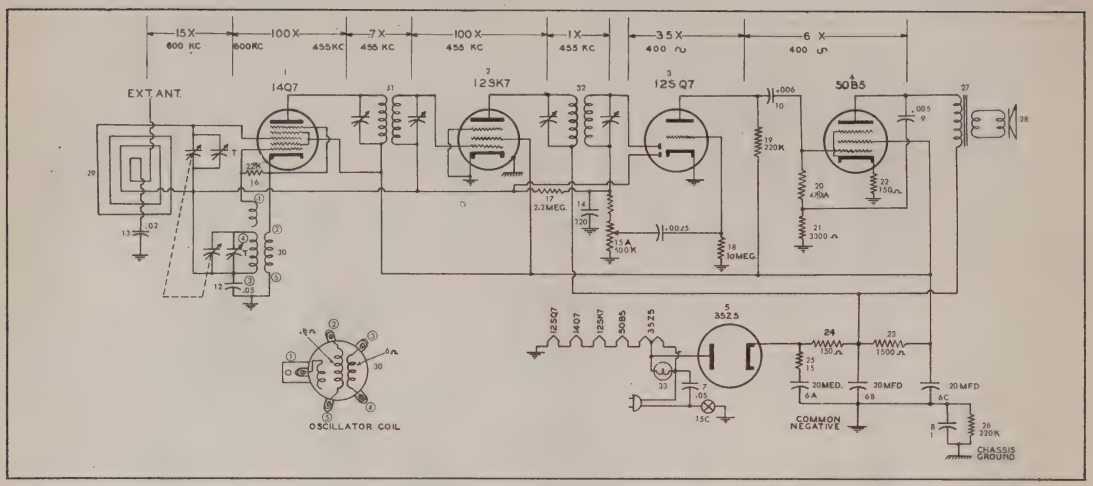
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MURPHY PART No.		
33	Bayonet	6-8	0.15	Brown			Type 47

CHASSIS—BOTTOM VIEW

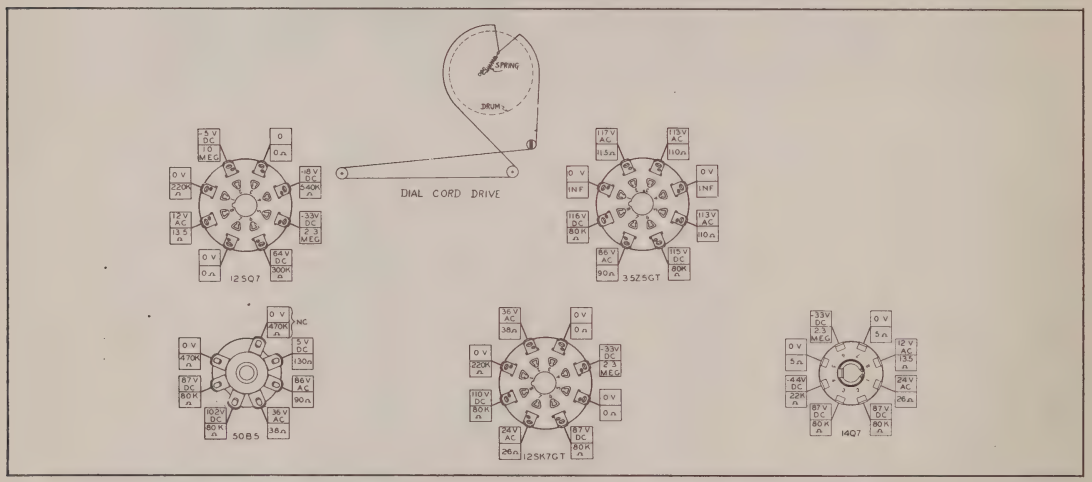


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1 - DC Voltage measurements are at 20,000 ohms per volt: AC Voltages measured at 1000 ohms per volt.

2 - Socket connections are shown as bottom views.

3 - Measured values are from socket pin to common negative.

4 - Line voltage maintained at 117 volts for voltage readings.

5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.

6 - Volume control at maximum, no signal applied for voltage measurements.

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RCA VICTOR
MODELS 55AU-55U

RCA VICTOR MODEL 55U

RCA VICTOR
MODELS 55AU-55U

TRADE NAME	RCA Victor, Models 55AU, 55U (Chassis RC1017)
MANUFACTURER	Radio Corp. of America RCA Victor Division, Camden, New Jersey
TYPE SET	AC Comb. Supernet. Radio & Auto. Phono. - Self Contained Loop Antenna
TUBES (FIVE)	Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
AUTOMATIC CHANGER-For service information refer to RCA Victor data sheet on Model 960015	
POWER SUPPLY	105-125 Volts AC Rating .265 Amp. @ 117 Volts AC(Radio Section Only)
TUNING RANGE—BROADCAST	540-1600KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to ant. stator section of tuning gang. Low side to B-.	455KC	High freq. end of dial.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and receiver B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
200 MMFD	High side to ext. ant. lead. Low side to B-.	1630KC	High freq.end of dial. Rotor at min. cap.	"	A5	Adjust for maximum output.
"	"	1400KC	Tune in 1400 KC signal.	"	A6	" " " "

Volume control at maximum volume and output from signal generator no higher than necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	6R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6(A)	30	150	70408	TCD48	M-50+30-150	TA-530	PRS150-40-40	BRD3515	Filter - Blue 95676
(B)	50	150							" - Red
7	.1	400	70617	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolating
8	.05	400	70615	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
9	.025	400	70612	TP451	S-6-02	TC-12	484-.025	DT4S25	50L6 Plate Bypass
10	.005	600	70606	TP408	S-6-005	TC-25	684-.005	DT6D5	Audio Coupling
11	.02	400	70611	TP423	S-4-02	TC-12	484-.02	DT4S2	" "
12	.002	400	70601	TP405	S-6-002	TC-22	484-.002	DT6D2	Tone Compensation
13	.05	400	70615	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
14	.005	400	70606	TP408	S-6-005	TC-25	484-.005	DT6D5	Ant. Coupling
15	.002	600	70601	TP405	S-6-002	TC-22	684-.002	DT6D2	RF Bypass Phono
16	.1	400	70617	TP428	S-4-1	TC-1	484-.1	DT4P1	Phono Coupling
17	820	500	39650	MC251	M0.3-38	MS-38	1464-.0008	1WE78	Audio Plate Bypass
18	5.6	500	70997	MC205	M0.5-55	MS-55	1468-.000005	5W5V5	Fixed Trimmer

CONTROLS

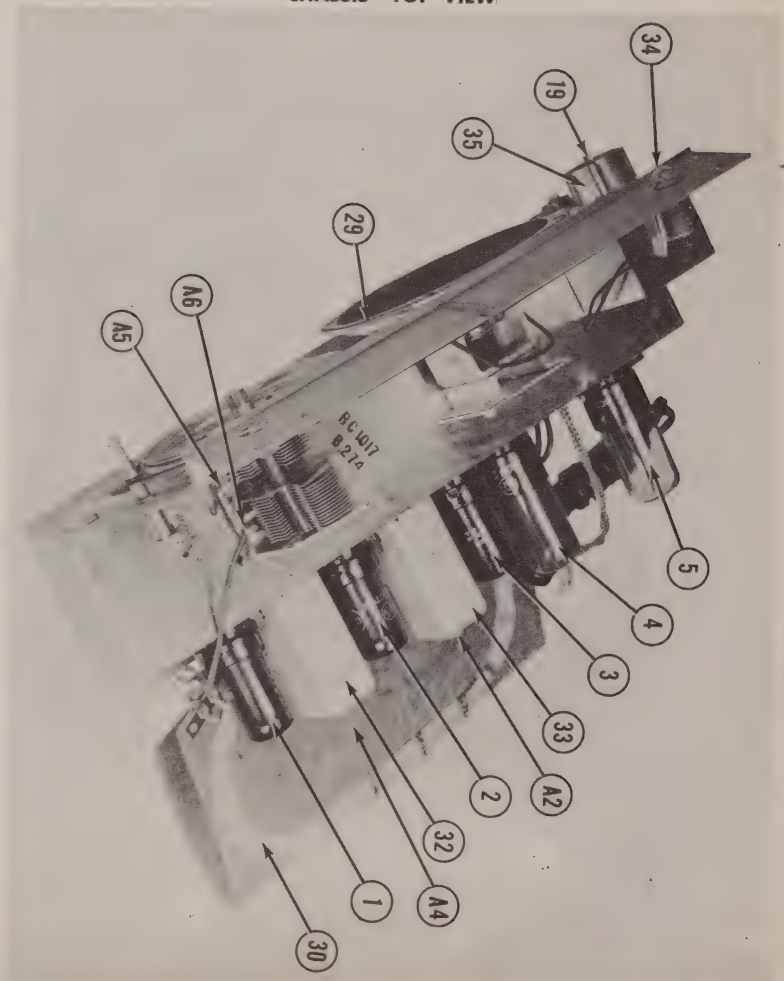
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19(A)	500KΩ	1	70322	MR48*	D13-133*	M-60-Z*	*See Note 1
(B)	Shaft		Not req.	Not req.	A	Not req.	Attach to 19A per instructions

Note 1 - Install a 50KΩ resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control. (Control viewed from shaft side, terminals down.)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	IRC PART No.	IDENTIFICATION CODES
20	22KΩ	½	30492	BTS-22K	Red-Red-Or. Osc. Grid
21	3.3 Meg.	½	12928	BTS-3.3 Meg	Or.-Or.-Grn. AVC Network
22	5.6 Meg.	½	31455	BTS-5.6 Meg	Grn.-Blue-Grn. 1st AF Grid
23	220KΩ	½	14583	BTS-220K	Red-Red-Yl. 1st AF Plate Load
24	470KΩ	½	30648	BTS-470K	Yl.-Vi.-Yl. Output Grid
25	150Ω	1	30680	BW-1-150	Br.-Grn.-Br. Output Cathode
26	1200Ω	1	6134	BW-1-1200	Br.-Red-Red Filter
27	220KΩ	½	14583	BTS-220K	Red-Red-Yl. Line Isolating

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		RCA PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
28	18002	2.952	220Ω Tapped @ 9Ω	.67Ω	70385	A-3876†	T-14S82†		Original Part No. is 922225-1 When using these replacements add extra filter in place of the tapped primary of the original. Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			RCA PART No.	JENSEN PART No.	UTAH PART No.	
29(A)	FIELD PM	VC IMP. 3.4Ω	70413	ST-106#		Original Part No. 9251?-1 #Improvise mounting bracket
	CONE DIA. 4½"	VC DIA. ½"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			
29(B)	4"x6" Elliptical		70405			Original Part No. 922279-1

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	RCA PART No.	MEISSNER PART No.	
30	Loop Ant.	.2Ω	1.4Ω	70393		
31	Osc. Coil	1Ω	8Ω	70403	14-1040	Add 50 MMFD from Lug 1 to Osc. Grid
32	Input IF	9.8Ω	9.8Ω	70386	16-6666	RCA Original Part No. 922246-1
33	Output IF	12.7Ω	12.7Ω	70387	‡16-6667	RCA " " " 922246-2

‡Add 100 MMFD from black lead to common negative.

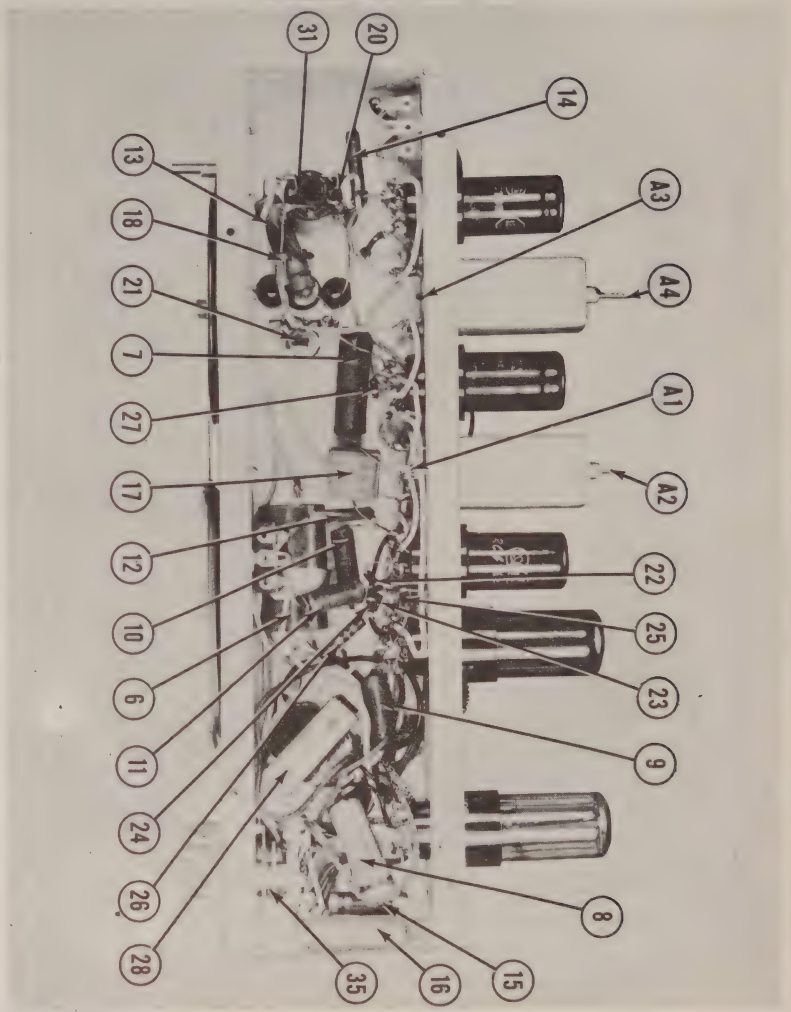
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					RCA PART No.		
34	Bayonet	6-8	.2	White	11765		Type 51

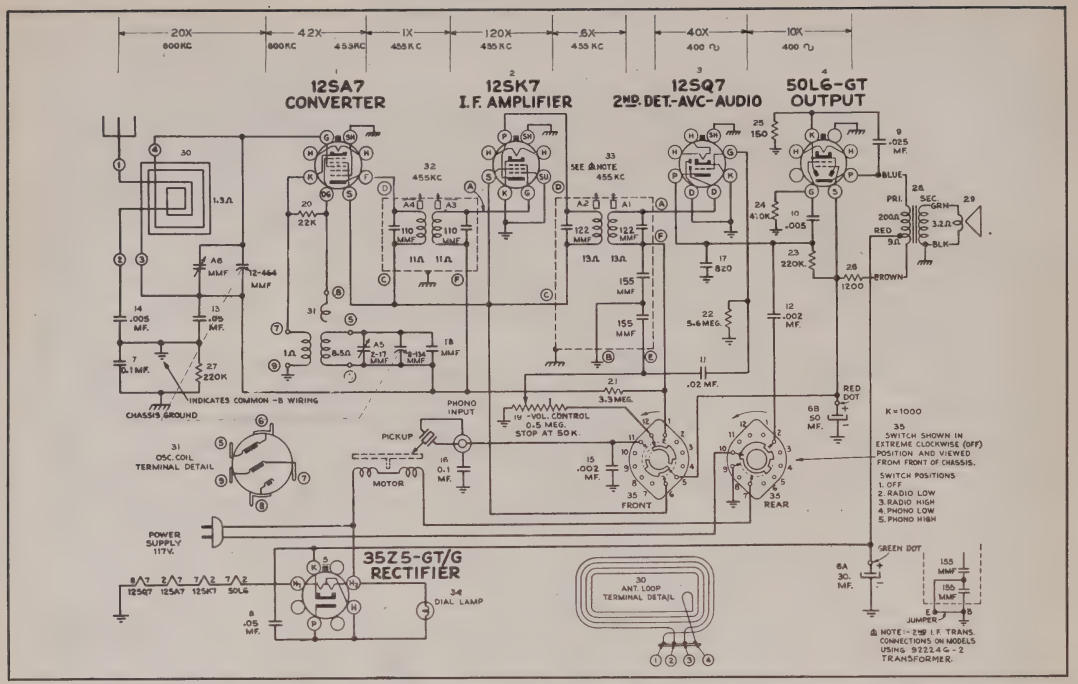
MISCELLANEOUS

ITEM No.	PART NAME	RCA PART No.	NOTES
	Tuning Cap.	70383	2 Gang Variable with Drum
	Gear, Rad-Ph.	70397	Power or Radio-Phono Switch Gear
	" Volume	70395	Volume Control Gear & Spring Assy.
	Dial Scale	70402	
	Knob	70401	Power or Radio-Phono. Switch
	"	70400	Tuning
	"	70399	Volume Control
	Hinge	70707	Cabinet Lid Hinge-(2 Required)
	Support	39545	Lid Support
	Foot	71595	Rubber Foot for Cabinet (4 Required)

CHASSIS—BOTTOM VIEW

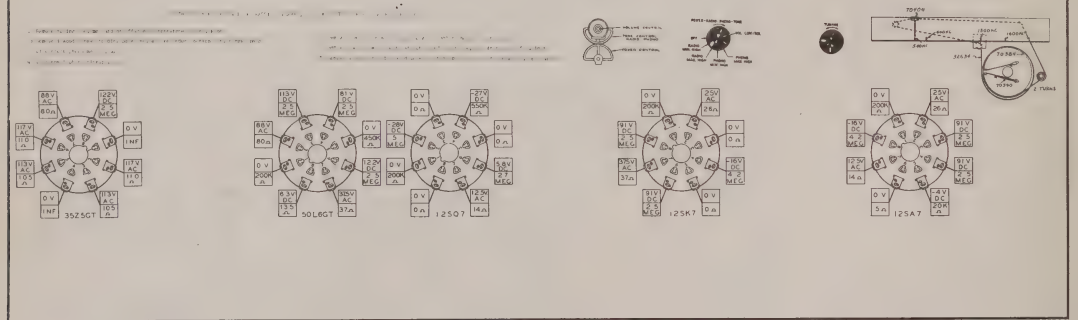


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for average operative stages, rather than absolute values. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3 volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1. DC voltage measurements are at 20,000 ohms per volt; AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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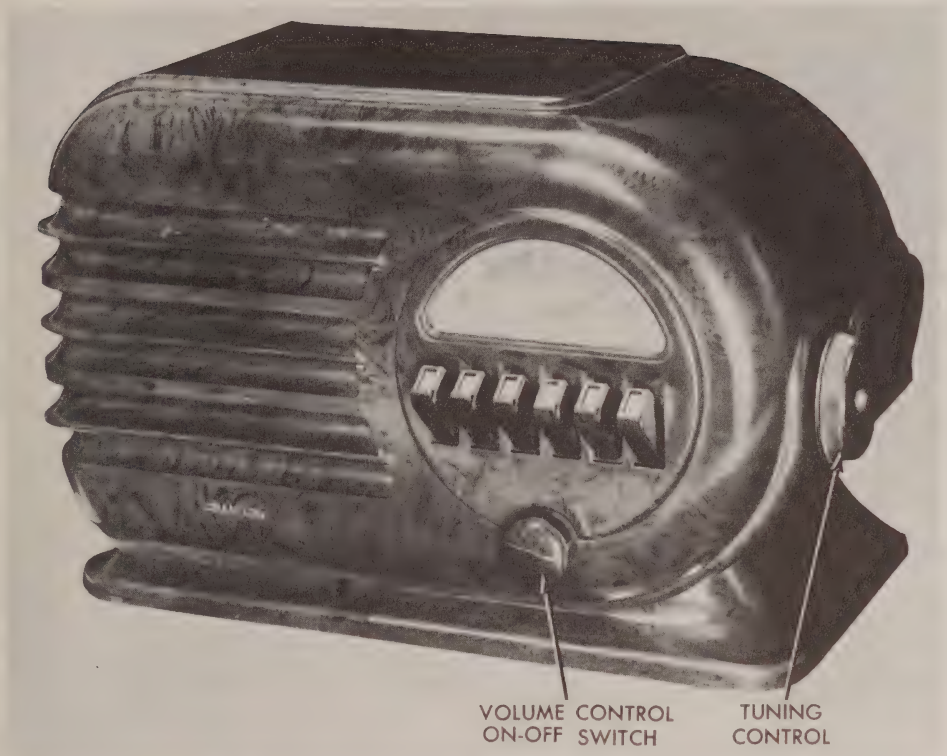
GRANTLINE
MODELS 605, 606



GRANTLINE
MODELS 605, 606

GRANTLINE MODEL 605

TRADE NAME	Grantline, Model 605, 606
SUPPLIER	W. T. Grant Co.
TYPE SET	AC-DC Superhet. - Self Contained Loop Ant. - 6 Pushbutton Automatic Tuning
TUBES (SIX)	Types 12SK7GT RF Amp., 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-1AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC Rating .235 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	530-1650KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to pin #8 (signal grid) of 12SA7. Low side to B-.	455KC	Plates out of mesh. High freq. end of dial.	Across voice coil	A1, A2, A3, A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and receiver B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
"	"	1650KC	"	"	A5	"
200 MMFD	High side to ext. ant. clip. Low side to B-.	1400KC	Tune in 1400 KC signal.	"	A6	Adjust for maximum output.

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: GRANTLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7GT	12SK7GT	8N	
2	Converter	12SA7GT	12SA7GT	8AD	
3	IF Amp.	12SK7GT	12SK7GT	8N	
4	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7(A)	40	150	11994	FP354	DY-3x20-150	EL-224	AF844D	UP4CJ1	■ Filter
(B)	20	150							▲ "
(C)	20	150							"
8	.1	400	C-8D-10780	TP428	S-4-1	TC-1	484-.1	DT4F1	Line Filter
9	.02	400	C-8D-10774	TP423	S-4-02	TC-12	484-.02	DT4S2	35L6 Plate Bypass
10	.004	600	C-8D-10788	TP407	S-6-004	TC-24	684-.004	DT6D4	Audio Coupling
11	.2	400	C-8D-10942	TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolating
12	.002	600	C-8D-10778	TP405	S-6-002	TC-22	684-.002	DT6D2	Audio Coupling
13	.05	200	C-8D-10770	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
14	.25	200	C-8D-10775	TP430	S-4-25	TC-2	484-.25	DT4P25	RF Bypass Pwr. Supp.
15	.02	400	C-8D-10774	TP423	S-4-02	TC-12	484-.02	DT4S2	AVC Filter
16	.01	400	C-8D-10761	TP421	S-4-01	TC-11	484-.01	DT4S1	Ant. Series Tuned
17	100	500	C-8F3-6	MC235	M0.5-31	1FM-31	1468-.0001	SW5T1	Audio Plate Bypass
18	47	500	C-8F3-9	MC225	M0.5-45	1FM-45	1468-.00005	SW5Q5	RF Bypass Vol. Cont.
19	100	500	C-8F3-6	MC235	M0.5-31	1FM-31	1468-.0001	SW5T1	RF Bypass Diode
20	100	500	C-8F3-6	MC235	M0.5-31	1FM-31	1468-.0001	SW5T1	Osc. Grid Cond.
21	100	500	C-8F3-6	MC235	M0.5-31	1FM-31	1468-.0001	SW5T1	RF Coupling
22	120	500	C-8F6-114	MC236	M0.5-315	1FM-315	1468-.00015	SW5T15	Ant. Coupling

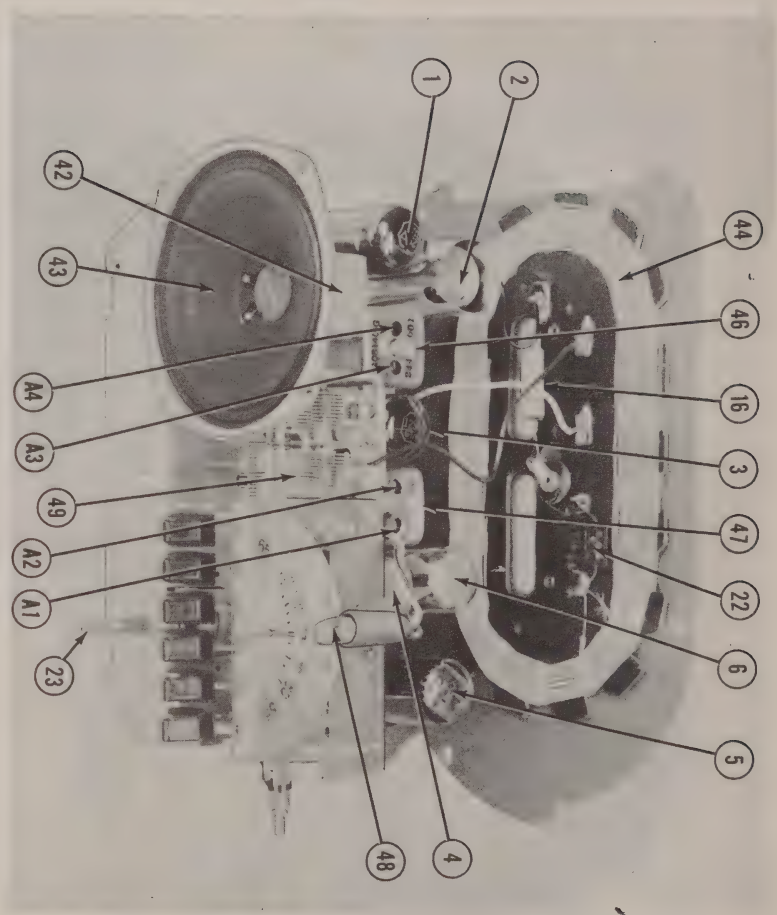
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GRANTLINE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23(A)	1 Meg.	1	101193	MK402	D13-137	AM-63-Z	Volume Control
(B)	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 23A per instructions
(C)	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GRANTLINE PART No.	IRC PART No.	IDENTIFICATION CODES
24	150KΩ	½	C-9B1-26	BTS-150K	Br.-Grn.-Yl. AVC Network
25	100Ω	½	C-9B1-50	Bw-½-100	Br.-Blk.-Br. RF Cathode
26	150KΩ	½	C-9B1-26	BTS-150K	Br.-Grn.-Yl. Line Isolating
27	5000Ω	½	C-9B1-70	BTS-4700	Grn.-Blk.-Red RF Plate Load
28	100KΩ	½	C-9B1-25	BTS-100K	Br.-Blk.-Yl. Converter Grid
29	47KΩ	½	C-9B1-82	BTS-47K	Yl.-Vi.-Or. Osc. Grid
30	22Ω	½	C-9B1-42	Bw-½-22	Red-Red-Blk. Rectifier Ballast
31	200Ω	1	C-9B2-54	BW-1-220	Red-Blk.-Br. Filter
32	1200Ω	1	C-9B2-63	BW-1-1200	Br.-Red-Red "
33	150Ω	½	C-9B1-52	Bw-½-150	Br.-Grn.-Br. IF Cathode
34	3.3 Meg.	½	C-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
35	47KΩ	½	C-9B1-23	BTS-47K	Yl.-Vi.-Or. Diode Load
36	4.7 Meg.	½	C-9B1-35	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
37	220KΩ	½	C-9B1-27	BTS-220K	Red-Red-Yl. 1st AF Plate Load
38	150Ω	½	C-9B1-52	Bw-½-150	Br.-Grn.-Br. Output Cathode
39	470KΩ	½	C-9B1-29	BTS-470K	Yl.-Vi.-Yl. Output Grid
40	33Ω	1	C-9B2-44	BW-1-33	Or.-Or.-Blk. Line Dropping

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		GRANTLINE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
41	3500Ω	3.2Ω	310Ω	.6Ω	10595	A-3876	T-13S42#		#Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			GRANTLINE PART No.	JENSEN PART No.		
42	FIELD PM	VC IMP. 3.2Ω	114191	ST-1131		†Improvise new mounting bracket.
43	CONE DIA. 4"	VC DIA. ½"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	GRANTLINE PART No.	MEISSNER PART No.	
44	Loop Ant. Assy.	30Ω	.85Ω	B212-11062		Specify brown or ivory back
45	Osc. Coil	1Ω	2.8Ω	A-13D-10615		
46	Input IF	30.5Ω	3Ω	108140C	13-6658	
47	Output IF	23.5Ω	2Ω	108145C	13-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					GRANTLINE PART No.		
48	Bayonet	6-8	0.15	Brown	107249		Type 47

MISCELLANEOUS

ITEM No.	PART NAME	GRANTLINE PART No.	NOTES
49	Tuning Cap.	B-8A-10211	2 Gang Variable with Trimmers A5,A6.
	Knob, Walnut	A-8B-11249-17	Volume
	" Ivory	A-8B-11249-8	"
	" Walnut	B-8B-10994-18	Tuning
	" Ivory	B-8B-10994-9	"
	Pushbutton	128292B-17	Walnut
	"	128292B-8	Ivory

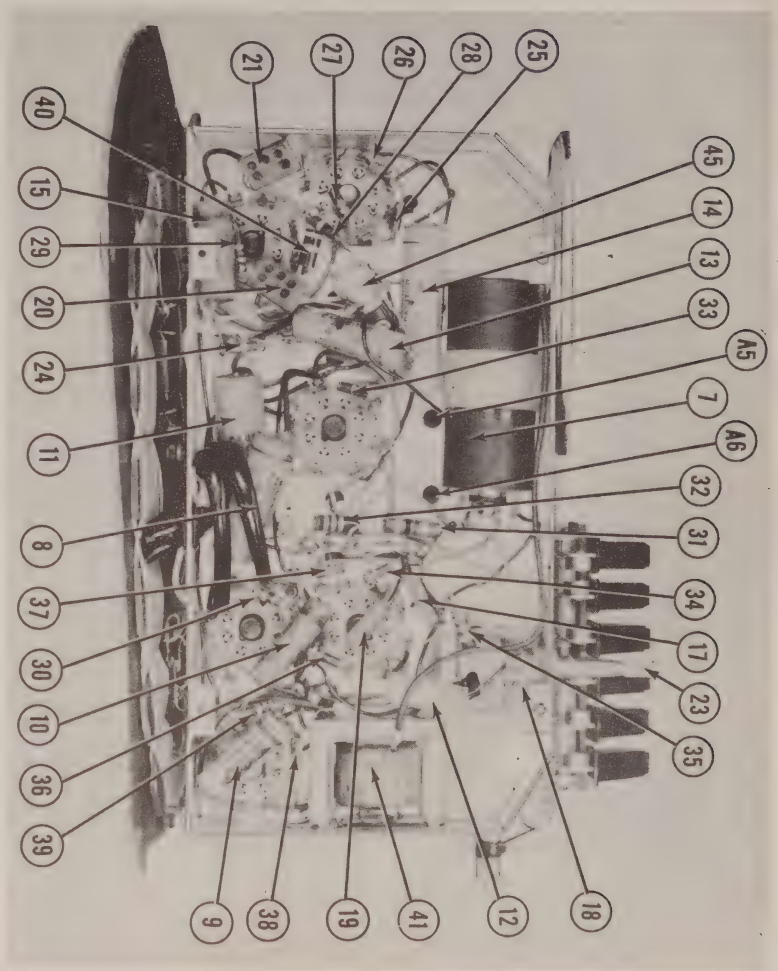
PUSHBUTTON ADJUSTMENTS

The pushbuttons may be used, after proper adjustment, for the automatic tuning of any six stations selected. They may be set up in any order.
1 - Turn on the radio and allow it time to warm up.
2 - From the call letter sheets supplied with radio press out call letters of six selected stations and insert them in any sequence in the rectangular opening in each pushbutton. Press in acetate tab into each pushbutton.
3 - Loosen locking screw in center of tuning knob by turning it counterclockwise.
4 - Press the first pushbutton down all the way. Hold it down firmly and turn the tuning knob to the station selected for that pushbutton. Tune the station in carefully and then release pushbutton.
5 - Follow the above procedure for each of the other five buttons, adjusting each to station selected.
6 - Rotate tuning knob as far clockwise as it will go. Tighten locking screw in center of tuning control knob very firmly.

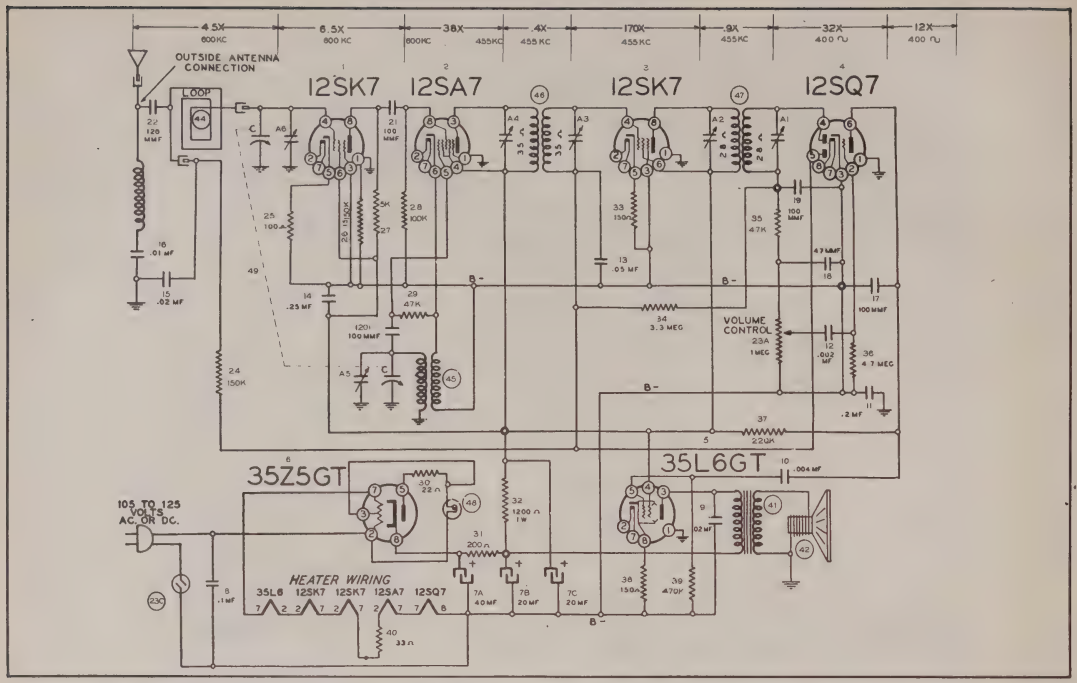
REPLACING DIAL POINTER DRIVE CORD

Six inches of cord are required. Numbers below correspond to circled numbers in diagram.
1 - Rotate tuning knob to extreme clockwise position.
2 - Tie cord to loop in spring as shown.
3 - Pass cord over idler pulley.
4 - Pass cord over pointer shaft; wind it one turn around shaft; pass it through key washer, then once more around shaft.
5 - Hook spring over end of dial support. Tie cord to spring. IMPORTANT: Full contraction of spring must rotate pointer shaft at least one half turn.
6 - Remove dial crystal by removing snap-in rivets.
7 - Make sure tuning knob is in extreme clockwise position. Then rotate pointer clockwise, against friction of shaft, until it is in a horizontal position, as shown.

CHASSIS—BOTTOM VIEW

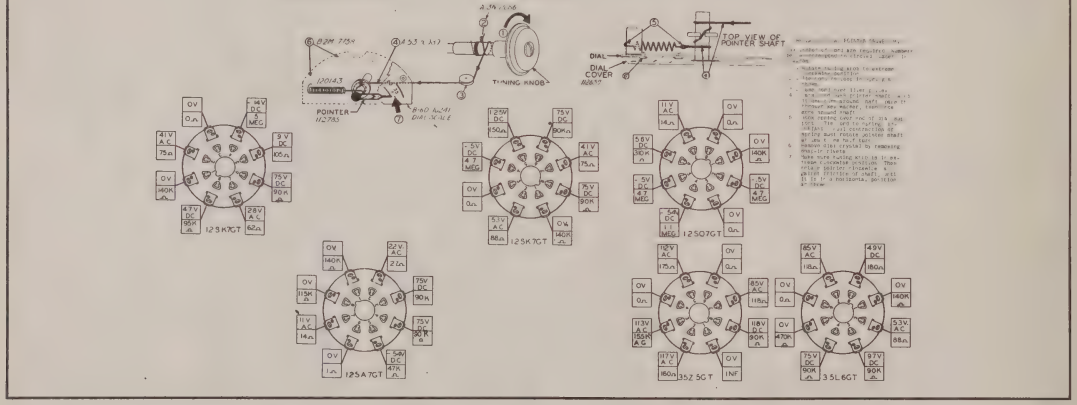


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for average operative stages, rather than absolute values. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3 volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1. DC voltage measurements are at 20,000 ohms per volt; AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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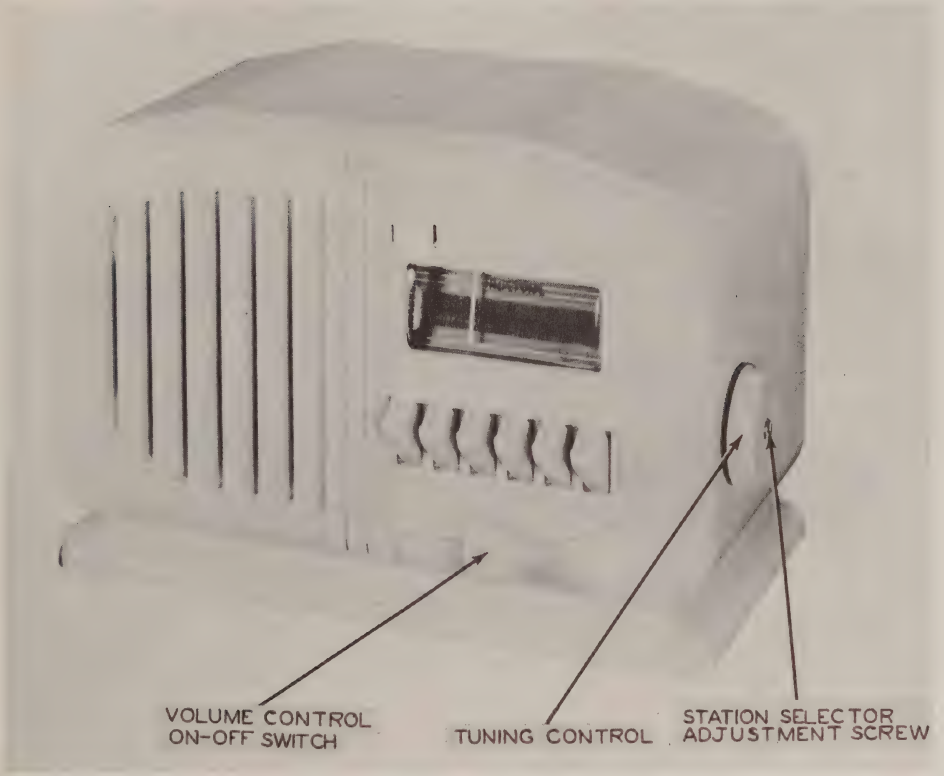
TRUETONE
MODEL D2615



TRUETONE
MODEL D2615

TRUETONE MODEL D2615

TRADE NAME	Truetone, Model D2615 (Factory Model 6D110)
MANUFACTURER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	AC-DC Superhet. - Self Contained Loop Antenna - (6) Pushbutton Tuning
TUBES (SIX)	Types 12SK7GT RF Amp., 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC Rating .235 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1650KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to pin #8 (signal grid) of 12SA7. Low side to B-.	455KC	High freq. end of dial. (min. cap.)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and receiver B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
"	"	1650KC	"	"	A5	"
	Loop	1400KC	Tune in 1400 KC signal.	"	A6	Adjust for maximum output. Connect signal generator to loop of few turns of wire and radiate signal into receiver loop.

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting. Have receiver loop in same relative position it will be when chassis is in cabinet.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7GT	12SK7GT	8N	
2	Converter	12SA7GT	12SA7GT	8AD	
3	IF Amp.	12SK7GT	12SK7GT	8N	
4	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7(A)	40	150	11994	FP354	DY-3X20-150	EL-224	AF844D	UP4CJ1	■ Filter
(B)	20	150							▲ "
(C)	20	150							"
8	.1	400	1001	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Filter
9	.02	400	10026	TP423	S-4-02	TC-12	484-.02	DT4S2	35L6 Plate Bypass
10	.004	600	100103	TP407	S-6-004	TC-24	684-.004	DT6D4	Audio Coupling
11	.2	400	100110	TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolating
12	.002	600	10025	TP405	S-6-002	TC-22	684-.002	DT6D2	Audio Coupling
13	.05	200	1009	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
14	.25	200	1006	TP430	S-4-25	TC-2	484-.25	DT4P25	RF Bypass Pwr. Supp.
15	.02	400	10026	TP423	S-4-02	TC-12	484-.02	DT4S2	AVC Filter
16	.01	400	10011	TP421	S-4-01	TC-11	484-.01	DT4S1	Ant. Series Tuned
17	100	500	1295	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	Audio Plate Bypass
18	50	500	12939	MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	RF Bypass Vol. Cont.
19	100	500	1295	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Diode
20	100	500	1295	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	Osc. Grid Cond.
21	100	500	1295	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	RF Coupling
22	125	500	129132	MC236	M0.5-315	1FM-315	1468-.00015	5W5T15	Ant. Coupling

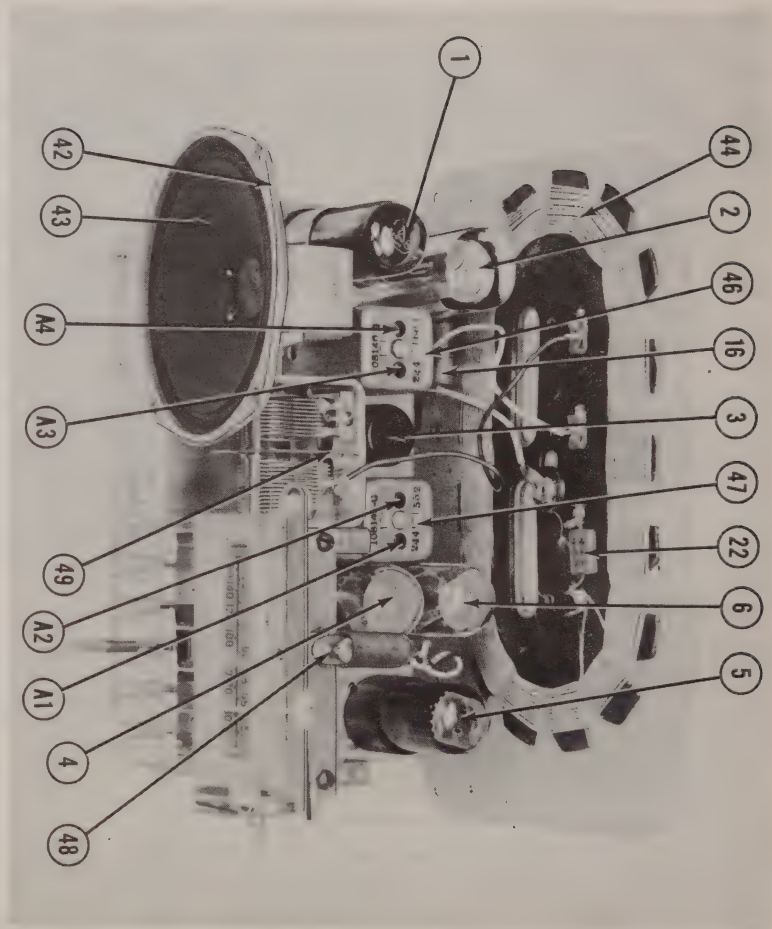
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23(A)	1 Meg	1	101211	MA402	D13-137	AM-63-Z	Volume Control
(B)	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 23A per instructions
(C)	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	IDENTIFICATION CODES
24	150KΩ	½	A-9B1-26	BTS-150K	Br.-Grn.-Yl. AVC Network
25	100Ω	½	A-9B1-50	BW-½-100	Br.-Blk.-Br. RF Cathode
26	150KΩ	½	A-9B1-26	BTS-150K	Br.-Grn.-Yl. Line Isolating
27	5000Ω	½	A-9B1-70	BTS-4700	Grn.-Blk.-Red RF Plate Load
28	100KΩ	½	A-9B1-25	BTS-100K	Br.-Blk.-Yl. Converter Grid
29	47KΩ	½	A-9B1-82	BTS-47K	Yl.-Vi.-Or. Osc. Grid
30	22Ω	½	A-9B1-42	BW-½-22	Red-Red-Blk. Rectifier Ballast
31	200Ω	1	A-9B2-54	BW-1-220	Red-Blk.-Br. Filter
32	1200Ω	1	A-9B2-63	BW-1-1200	Br.-Red-Red "
33	150Ω	½	A-9B1-52	BW-½-150	Br.-Grn.-Br. IF Cathode
34	3.3 Meg.	½	A-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
35	47KΩ	½	A-9B1-23	BTS-47K	Yl.-Vi.-Or. Diode Load
36	4.7 Meg.	½	A-9B1-35	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
37	220KΩ	½	A-9B1-27	BTS-220K	Red-Red-Yl. " " Plate Load
38	150Ω	½	A-9B1-52	BW-½-150	Br.-Grn.-Br. Output Cathode
39	470KΩ	½	A-9B1-29	BTS-470K	Yl.-Vi.-Yl. " Grid
40	33Ω	1		BW-1-33	Or.-Or.-Blk. Line Dropping

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
41	3500Ω	3.2Ω	310Ω	.36Ω	10595	A-3876	T-13842#		#Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TRUETONE PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
42	FM	3.2Ω	114191	ST-113†		†Improvise new mounting bracket.
	CONE DIA.	VC DIA.				
43	4½"	½"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	
44	Loop Ant. & Loading Coil	.1Ω	.75Ω	B-13E-10123		
		30Ω				
45	Osc. Coil	1Ω	2.8Ω	A-13D-10215		
46	Input IF	30.5Ω	31Ω	108140G	16-6658	
47	Output IF	23.5Ω	25Ω	108145C	16-6660	

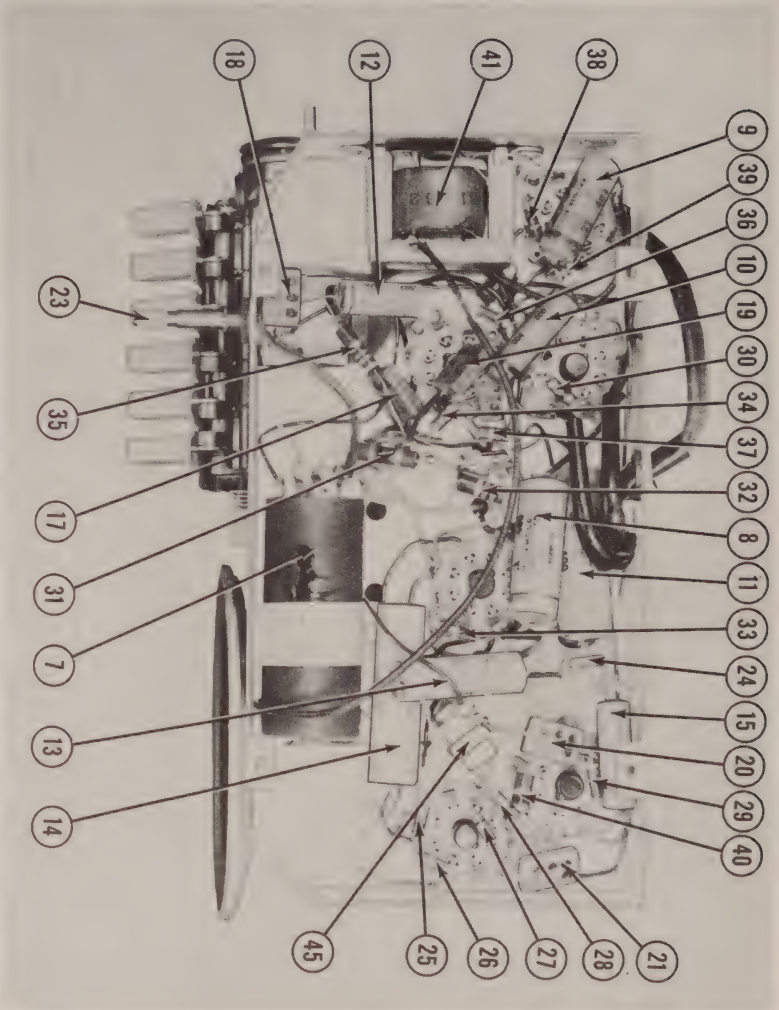
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					TRUETONE PART No.		
48	Bayonet	6-8	0.15	brown	127249		#47

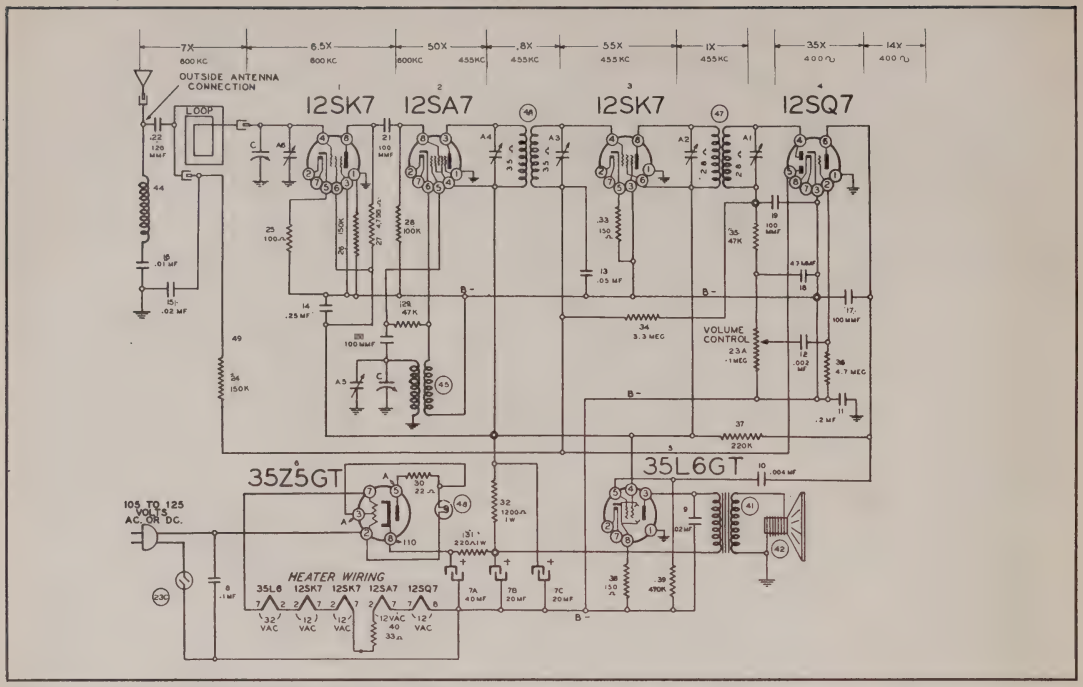
MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
	Tuning Cap.	B-5A-10212	2 Gang Variable
	Knob	126527-6	Tuning Knob
	Spring	120388	Locking Spring for tuning knob
	Knob	128154-8	Volume Control Knob
	Pushbuttons	126292-6	Ivory, Automatic Tuning
	Dial Scale	B-6D-10214	

CHASSIS—BOTTOM VIEW



SCHEMATIC DIAGRAM



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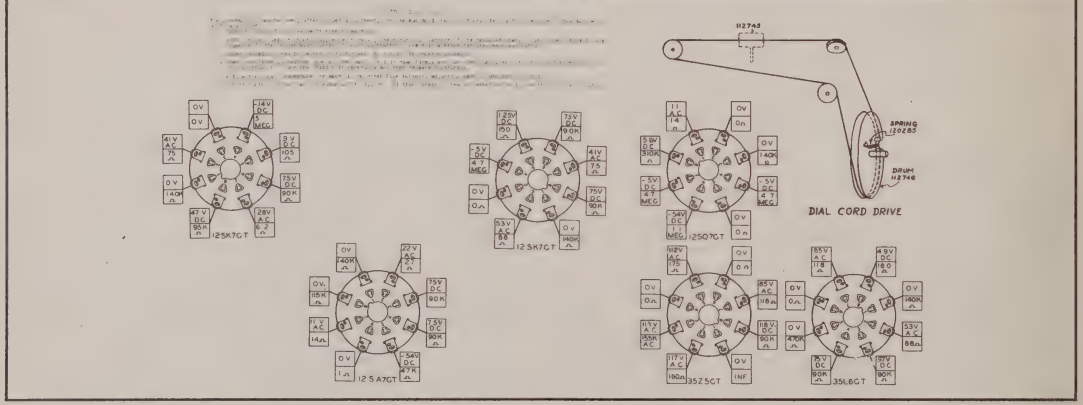
VOLTAGE AND RESISTANCE ANALYSIS CHART



1. DC voltage measurements are at 20,000 ohms per volt; AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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HALLICRAFTERS MODEL S-40

TRADE NAME Hallicrafters, Model S-40
MANUFACTURER The Hallicrafters Co., Chicago 16, Illinois
TYPE SET AC Operated 4 Band Superheterodyne Communications - Commercial Type Receiver
TUBES (NINE) Types 6SG7 RF Amp., 6SA7 Mixer & Local Oscillator, 6SK7 1st IF Amp., 6SK7 2nd IF Amp 6SG7 Det.-1AF, 6F6G Power Output, 6H6 AVC & Noise Limiter, 6J5GT Beat Frequency Osc., 80 Rectifier.
POWER SUPPLY 117 Volts AC Rating .715 Amp. @ 117 Volts AC
6 Volt DC - Current Drain (Filament only, 5 Amperes)
" " " Vibrator Power Supply
Approx. 10 Amperes.
TUNING RANGE--BROADCAST (Band 1) 550-1700KC **SHORT WAVE** (Band 2) 1.68-5.4MC (Band 3) 5.3-15.8MC (Band 4) 15.3-44MC

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
	High side to stator plates of center section of main tuning gang. Low side to chassis.	455KC	1	High end of band.	Across voice coil	A1,A2, A3,A4, A5,A6.	Adjust for maximum output. Repeat until assured of accurate alignment. Signal level at the generator should be app. 52 microvolts for a 500 milliwatt audio output level.
	"	"	"	"	"		Turn off 400-cycle modulation on signal generator. Removd pitch control knob with an Allen wrench and adjust slotted screw shaft for zero beat. Replace knob so that red mark is on top.
390 ohm res. ± 20% (non-inductive)	High side to terminal A1 of antenna terminal board. (leave jumper between A2 and GND. Low side to chassis.	36MC	4	36MC	"	A7	Adjust for maximum output.
"	"	18MC	"	18MC	"	A8	Adjust for maximum output and repeat step on A7. If greatly detuned repeat adjustments on A7 and A8 several times.
"	"	36MC	"	36MC	"	A9,A10	Adjust for maximum output.
"	"	18MC	"	18MC	"	A11,A12	Adjust for maximum output and if greatly detuned repeat adjusts on A9,A10, A11 and A12 for maximum.
"	"	14MC	3	14MC	"	A13	Adjust for maximum output.
"	"	7MC	"	7MC	"	A14	Adjust for maximum output. Recheck adjust on A13 at 14MC and A14 at 7MC for maximum.
"	"	10MC	"	10MC	"	A15	Adjust for maximum output. Recheck A13 at 14MC and A14 at 7MC.
"	"	14MC	"	14MC	"	A16,A17	Adjust for maximum output.
"	"	7MC	"	7MC	"	A18,A19	Adjust for maximum output. Repeat adjustments as given on A16, A17, A18 and A19 for maximum output.
"	"	5MC	2	5MC	"	A20	Adjust for maximum output.
"	"	1.8MC	"	1.8MC	"	A21	Adjust for maximum output. Repeat adjustments as given on A20 and A21 for maximum output.
"	"	3MC	"	3MC	"	A22	Adjust for maximum output. Recheck A20 at 5MC and A21 at 1.8MC for maximum output.
"	"	5MC	"	5MC	"	A23,A24	Adjust for maximum output.
"	"	1500KC	1	1500KC	"	A25	Adjust for maximum output.
"	"	600KC	"	600KC	"	A26	Adjust for maximum output. Recheck A25 at 1500KC for maximum output.
"	"	1000KC	"	1000KC	"	A27	Adjust for maximum output. Repeat adjustments on A25 and A26 for maximum output at 1500 and 600KC.
"	"	1500KC	"	1500KC	"	A28,A29	Adjust for maximum output.

Before aligning allow approximately 10 minutes for signal generator and receiver to warm up.
Use insulated alignment screwdriver for adjusting. Output from signal generator modulated at 400 Cycles and output attenuator on signal generator adjusted to give 500 milliwatt audio output on the output meter.
Set receiver controls as follows:
Sensitivity Control at maximum sensitivity (full clockwise).
Volume Control at maximum volume (full clockwise)
A.V.C. Switch at off.
Noise Limiter Switch at off.
CW-AM Switch at AM.
Tone Control at High.
Standby Receive Switch at Receive.
After completing the RF alignment check the image frequency to determine whether the oscillator frequency is higher than the signal frequency on bands 1, 2, and 3 and lower than signal frequency on band 4.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: HALLICRAFTERS PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SG7	6SG7	8BK	
2	Mixer & Local Oscillator	6SA7	6SA7	8R	
3	1st IF Amp.	6SK7	6SK7	8N	
4	2nd IF Amp.	6SK7	6SK7	8N	
5	Det. 1st Audio Amp.	6SQ7	6SQ7	8Q	
6	Power Output	6F6-G	6F6-G	7S	
7	AVC & Noise Limiter	6H6	6H6	7Q	
8	Beat Freq. Osc.	6J5GT	6J5GT	6Q	
9	Rectifier	80	80	4C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

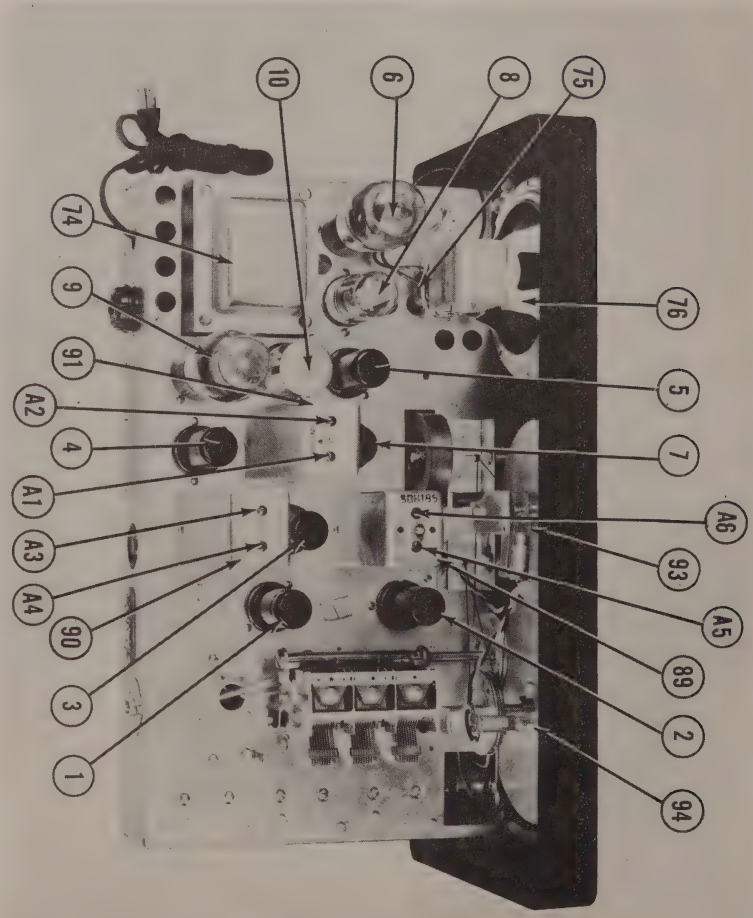
ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HALLICRAFTER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
10(A)	30	450	45A062	FP429	DY-4x10-450	EL-424		UP9DJ53	▲ Filter *
(B)	10	450							■ "
(C)	10	450			M-10-450				▲ "
11	30	25	45A034	TC26	M-25-25	TA-25	PRS-V25-25	BR252A	6F6 Cath. Bypass
12	.01	400	46AW103J	TP421	S-4-01	TC-11	484-.01	DT4S1	DC Block BFO Trans.
13	.05	400	46AW503J	TP426	S-4-05	TC-15	484-.05	DT4S5	6SK7 Screen Bypass
14	.1	400	46AV104J	TP428	S-4-1	TC-1	484-.1	DT4F1	6F6 Screen Return
15	.01	400	46AW103J	TP421	S-4-01	TC-11	484-.01	DT4S1	Line Filter
16	.02	600	46AY203J	TP412	S-6-02	TC-12	684-.02	DT6S2	Tone Cont. Bypass
17	.002	1000	46A023	TP456	S-16-002	TR-22	1084-.002	MD16D2	6F6 Plate Bypass
18	.02	600	46AY203J	TP412	S-6-02	TC-12	684-.02	DT6S2	Audio Coupling
19	.02	200	46AU203J	TP423	S-4-02	TC-12	484-.02	DT4S2	" "
20	.05	200	46AU503J	TP426	S-4-05	TC-15	484-.05	DT4S5	6H6 Plate Bypass
21	.02	600	46AY203J	TP412	S-6-02	TC-12	684-.02	DT6S2	6SK7 Plate Bypass
22	.05	200	46AU503J	TP426	S-4-05	TC-15	484-.05	DT4S5	6SK7 Cath. Bypass
23	.05	200	46AU503J	TP426	S-4-05	TC-15	484-.05	DT4S5	6SK7 Cath. Bypass
24	.02	200	46AU203J	TP423	S-4-02	TC-12	484-.02	DT4S2	AVC Bypass
25	.05	400	46AW503J	TP426	S-4-05	TC-15	484-.05	DT4S5	6SA7 Plate Decoupling
26	.01	400	46AW103J	TP421	S-4-01	TC-11	484-.01	DT4S1	6SA7 Osc. Plate
27	.05	400	46AW503J	TP426	S-4-05	TC-15	484-.05	DT4S5	6SG7 Screen Decoup.
28	.05	200	46AU503J	TP426	S-4-05	TC-15	484-.05	DT4S5	6SG7 Cath. Bypass
29	.05	200	46A091	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Decoupling
30	100	500	CM20A101M	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	6J5 Grid-BFO Trans.
31	470	500	CM20A471J	MC245	MO.5-35	1FM-35	1468-.0005	5W5T5	BFO Resonating Cond.
32	270	500	CM20A271K	MC241	MO.5-33	1FM-325	1468-.0003	5W5T3	6SQ7 Plate RF Filter
33	24	500	CC21UK240M						Trans. Coupling
34	47	500	CM20A470M	MC223	MO.5-45	1FM-45	1468-.00005	5W5Q5	AVC Filter
35	47	500	CM20A470M	MC223	MO.5-45	1FM-45	1468-.00005	5W5Q5	" "
36	390	500	CM20A391K	MC243	MO.5-34	1FM-34	1468-.0004	5W5T4	6SA7 Grid Osc. Cond.
37	15	500	CC21UK150M						Trans. Coupling
38	100	500	CC25UK101K						Fixed Trimmer
39	3300	300		MC463	MW.5-24	1FM-24	1467-.004	1D5D4	Audio Coupling

*On Mallory, Sprague, and Cornell Dubilier replacements do not connect 20 MFD, 25 volt section. On Solar replacement parallel three sections.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HALLICRAFTERS PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
40(A)	500K	1	25A534	MR48	D13-133	M-60-4	Volume control
(B)	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 4DA per instructions
41(A)	500K	1	25A533		No Repl.	No. Repl.	Sensitivity Control
(B)	Switch						Attach to 41A per instructions

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	HALLI-CRAFTERS PART No.	IRC PART No.	
42	22Ω	½	RC20AE220M	BW-½-22	Red-Red-Blk. RF Grid Suppressor
43	120Ω	½	RC20AE121K	BW-½-120	Br.-Red-Br. RF Cathode Bias
44	22Ω	½	RC20AE220M	BW-½-22	Red-Red-Blk. RF Plate Suppressor
45	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. AVC Filter
46	1000Ω	½	RC20AE102M	BTS-1000	Br.-Blk.-Red Screen Dropping
47	6800Ω	1	RC30AE682K	BW-2-6800	Blue-Gray-Red RF Transformer Load
48	1800Ω	½	RC20AE183K	BTS-1800	Br.-Gray-Or. Osc. Grid
49	10Ω	½	RC20AE100M	BW-½-10	Br.-Blk.-Blk. Osc. Suppressor
50	10KΩ	2	RC41AE103K	BT-2-10K	Br.-Blk.-Or. Osc. Plate Dropping
51	1000Ω	½	RC20AE102K	BTS-1000	Br.-Blk.-Red 1st IF Cathode
52	1000Ω	½	RC20AE102K	BTS-1000	Br.-Blk.-Red 2nd IF Cathode
53	12KΩ	4	RC65CE123K	AB-12K	Br.-Red-Or. Conv. Plate Decoupling
54	1000Ω	10	24BG102E	AB-1000	Plate Dropping
55	2.2 Meg.	½	RC20AE225M	BTS-2.2 Meg.	Red-Red-Grn. AVC Decoupling
56	1 Meg.	½	RC20AE105M	BTS-1 Meg.	Br.-Blk.-Grn. Diode Load
57	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. Noise Limiter
58	47KΩ	½	RC20AE473M	BTS-47K	Yl.-Vi.-Yl. Diode Load
59	270KΩ	½	RC20AE274K	BTS-270K	Red-Vi.-Yl. Noise Limiter
60	270KΩ	½	RC20AE274K	BTS-270K	Red-Vi.-Yl. Diode Filter
61A	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-blue 1st AF Grid-See Note 2
61B	100Ω	½	RC20AE101K	BW-½-100	Br.-Blk.-Br 1st AF Cathode-See Note 1
62	150Ω	½	RC20AE151M	BW-½-150	Br.-Grn.-Br. AVC Decoupling
63	12KΩ	4	RC41AE123K	AB-12K	Br.-Red-Or. 1st AF Plate Dropping
64	270KΩ	½	RC20AE274K	BTS-270K	Red-Vi.-Yl. 1st AF Plate Load
65	10KΩ	2	RC65CE103K	BT-2-10K	Br.-Blk.-Or. Filter
66	1000Ω	½	RC20AE102K	BTS-1000	Br.-Blk.-Red 2nd IF Plate Dropping
67	15KΩ	2	RC41AE153M	BT-2-15K	Br.-Grn.-Or. BF Osc. Plate Load
68	47KΩ	½	RC20AE473M	BTS-47K	Yl.-Vi.-Or. BF Osc. Grid
69	470KΩ	½	RC20AE474M	BTS-470K	Yl.-Vi.-Yl. Output Grid
70	680Ω	1	RC31AE681K	BW-1-680	Blue-Gray-Br. Output Cathode
71	10KΩ	½		BTS-10K	Br.-Blk.-Or. Screen Dropping
72	15KΩ	1		BTS-15K	Br.-Grn.-Or. Tone Comp.
73	470Ω	5		AB-500	Yl.-Vi.-Br. Plate Dropping

Note 1-Used in early production.
Note 2-Used in later production.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	HALLI-CRAFTER PART No.	STANCOR PART No.	THORDARSON PART No.	
74	117VAC @.715A	380V(CT) @.065A	4.9V @ 1.6A	6.3V @ 3.4A	52C026	P60121	T13R13	Have mounting brackets that are supplied with replacement transformer.

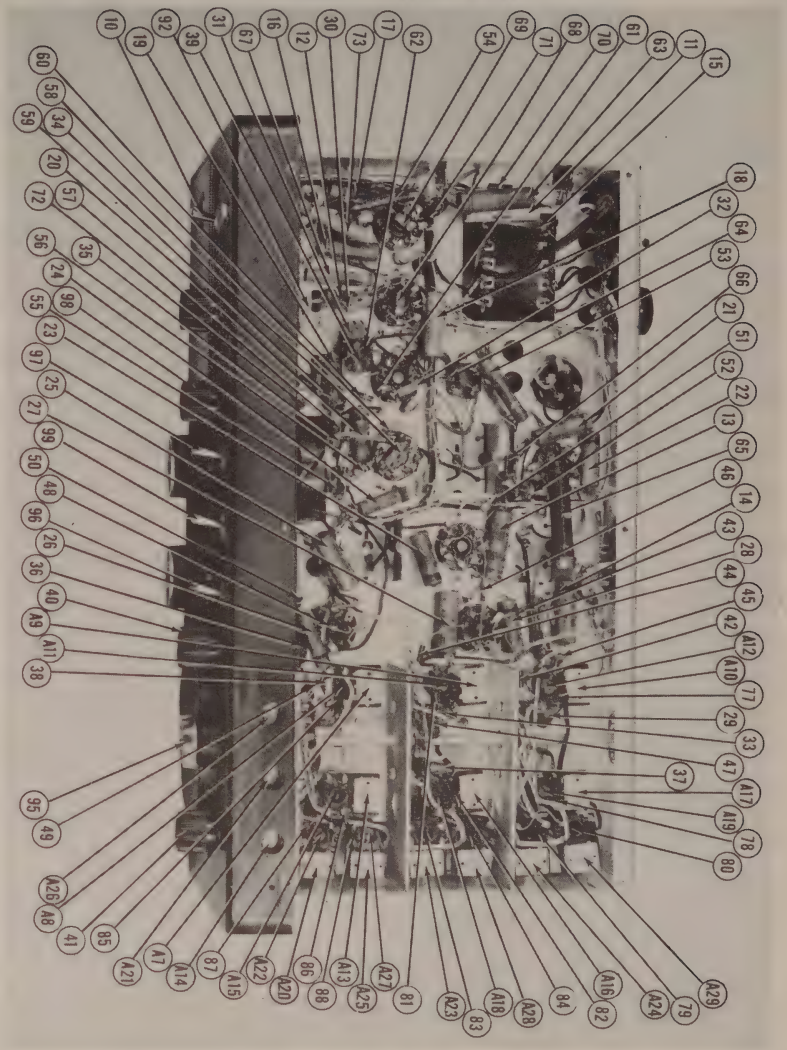
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		HALLI-CRAFTER PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
75	6.6KΩ	2.2Ω	67ΩΩ	.8Ω	Part of [illegible]	A3677	T-[illegible]		Have mounting tabs down are mount by original bracket. *Mount on chassis at side of speaker.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			HALLICRAFTERS PART No.	JENSEN PART No.		
76	FIELD	VC Lic.				
	PM	2.3Ω	98C046	ST-1071		†Fabricate new mounting bracket.
	CONE DIA.	VC DIA.				
	4-12/16"	2/8"	NOT AVAILABLE-REPLACEABLE-USE COMPLETE SPEAKER UNIT			
	Some models have a "Dynamic Speaker"		With 2.3Ω Voice Coil and 1100Ω Field coil.			

CHASSIS—BOTTOM VIEW



VOLTAGE AND RESISTANCE ANALYSIS CHART

1 - DC Voltage measurements are at 20,000 ohms per volt: AC Voltages measured at 1000 ohms per volt.

2 - Socket connections are shown as bottom views.

3 - Measured values are from socket pin to common negative.

4 - Line voltage maintained at 117 volts for voltage readings.

5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.

6 - Volume control at maximum, no signal applied for voltage measurements.

PARTS LIST AND DESCRIPTIONS

R F COILS

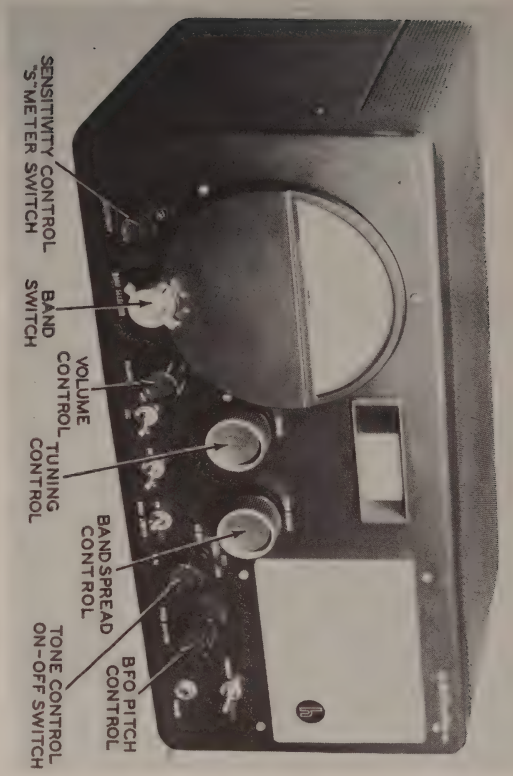
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA HALLI-CRAFTER PART No.	REPLACEMENT DATA MEISSNER PART No.	
77	Band 4 Ant.	.1Ω	0Ω	51B783		
78	Band 3 Ant.	.1Ω	0Ω	51B782		
79	Band 2 Ant.	.5Ω	1.5Ω	51B781		
80	Band 1 Ant.	25Ω	5Ω	51B780		
81	Band 4 RF	1.2Ω	0Ω	51B787		
82	Band 3 RF	7.5Ω	0Ω	51B786		
83	Band 2 RF	.8Ω		51B785		
84	Band 1 RF	.1Ω	5Ω	51B784		
85	Band 4 Osc.	0Ω	0Ω	51B791		
86	Band 3 Osc.	0Ω	0Ω	51B790		
87	Band 2 Osc.	.1Ω	1.2Ω	51B789		
88	Band 1 Osc.	.5Ω	5Ω	51B788		
89	Input IF	21Ω	6.5Ω	50H185		
90	InterstageIF	20Ω	4Ω	50C185		
91	Output IF	18Ω	18Ω	50C192		
92	B.F.O.	11Ω		54B028		

DIAL LIGHT

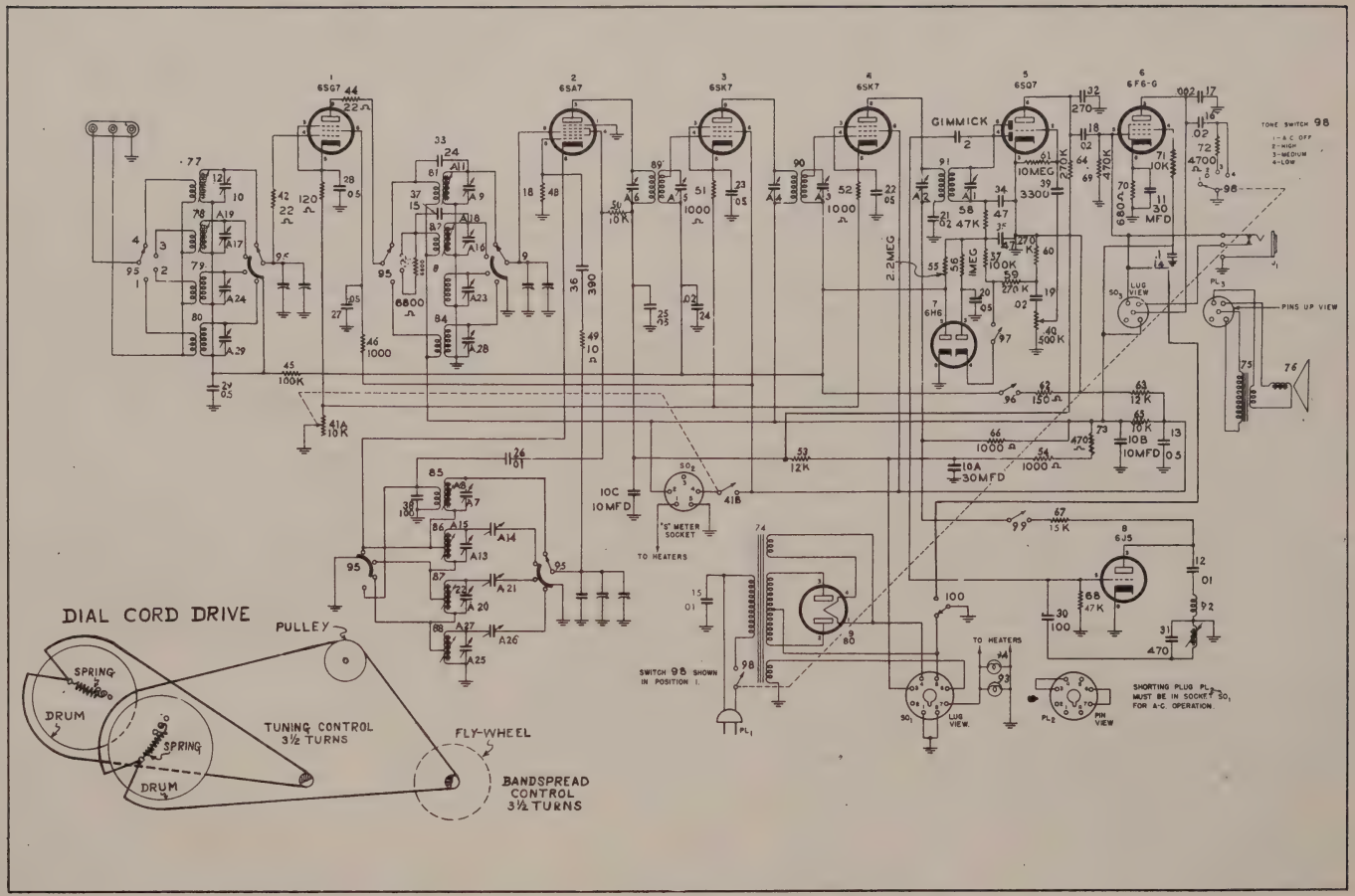
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA HALLI-CRAFTER PART No.		INSTALLATION NOTES
93	Bayonet	6-8	0.25	Blue	39A003		Type 44
94	"	6-8	0.25	Blue	39A003		" "

MISCELLANEOUS

ITEM No.	PART NAME	HALLI-CRAFTER PART No.	NOTES
A14	Trimmer	44B141	Oscillator Pad, Band 3
A21	"	44A024	Oscillator Pad, Band 2
A26	"	44A142	Oscillator Pad, Band 1
95A	Band Switch	62B039	Antenna & RF Sections
95B	" "	62A044	Osc. Sections
95C	" "	74C172	Drive Shaft
96	Switch (AVC)	60A138	SPST Toggle
97	" (NL)	60A138	" "
98a	Switch (Tone)	60A225	SP4T Tone Switch
98b	" (On-Off	60A225	SPST On-Off
99	Switch (AM-CW)	60A138	SPST Toggle
100	" (ST-REC)		4PDT "
	Tuning Cap.	48C138	Main Tuning & Bandspread Capa.
	Jack(Head Pn.)	36A002	Closed Circuit



SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc. as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams, & Co., Inc. by the manufacturers of the particular type of replacement part listed."

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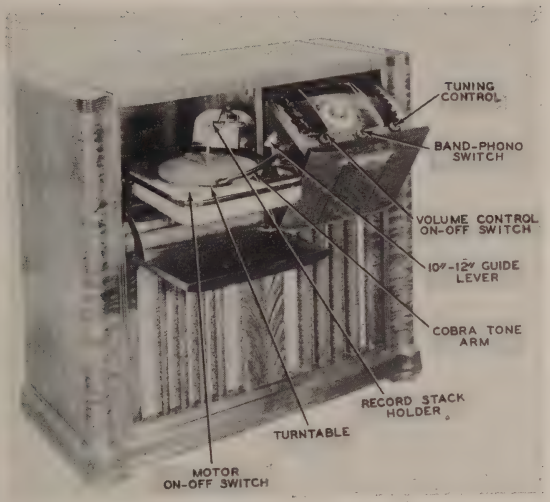
HOWARD W. SAMS & CO., INC.
2924 EAST WASHINGTON STREET • INDIANAPOLIS 6, INDIANA

ZENITH
MODELS 12 H 090, 12 H 091, 12 H 092,
12 H 093, 12 H 094 (CHASSIS 11 C 21)

ZENITH
MODELS 12 H 090, 12 H 091, 12 H 092,
12 H 093, 12 H 094 (CHASSIS 11 C 21)
Page 1



ZENITH MODEL 12H090

TRADE NAME -
Zenith, Models 12H090, 12H091, 12H092, 12H093, 12H094, (Chassis 11C21)

MANUFACTURER -
Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.

TYPE SET -
AC Operated Superheterodyne Radio, Automatic Phonograph Combination for Standard Broadcast and FM Bands.

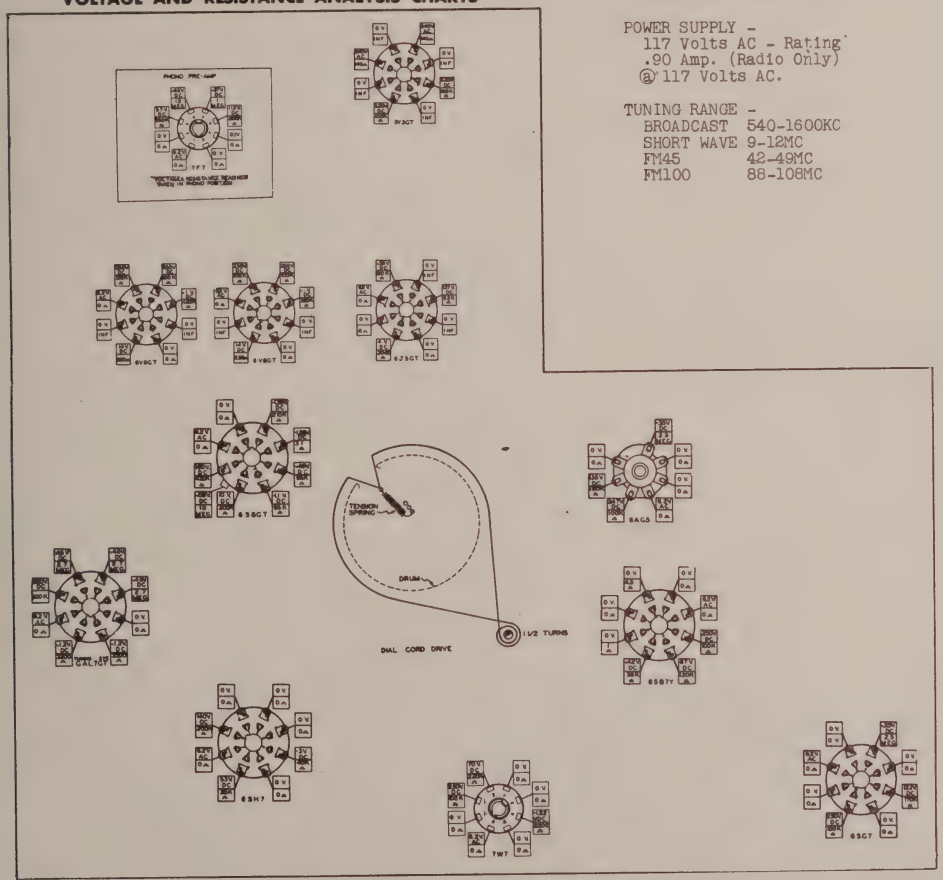
TUBES -
Types, 6AG5 RF Amp., 6SB7Y Converter, 6SG7 1st IF Amp., 7W7 2nd IF Amp., 6SH7 Limiter, 6S8GT Discriminator-Det.-AVC-1AF, 7F7 Phono. Osc.-Amp., 6J5GT Inverter, Two 6V6GT Power Output, 5Y3GT Rectifier.

POWER SUPPLY -
117 Volts AC - Rating .90 Amp. (Radio Only) @ 117 Volts AC.

TUNING RANGE -

BROADCAST	540-1600KC
SHORT WAVE	9-12MC
FM45	42-49MC
FM100	88-108MC

VOLTAGE AND RESISTANCE ANALYSIS CHARTS



1. DC voltage measurements are at 20,000 ohms per volt; AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6AG5	6AG5	7BD	
2	Converter	6SB7Y	6SB7Y	8R	
3	1st IF Amp.	6SG7	6SG7	8BK	
4	2nd IF Amp.	7W7	7W7	8BJ	
5	Limiter	6SH7	6SH7	8BK	
6	Det.-AVC-AF	6S8GT	6S8GT		
7	Tuning Eye	6AL7GT	6AL7GT		
8	Phono.-Osc.-Amp.	7F7	7F7	8AC	
9	Inverter	6J5GT	6J5GT	6Q	
10	Power Output	6V6GT	6V6GT	7AC	
11	Power Output	6V6GT	6V6JT	7AC	
12	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
13(A)	30	450	22-1496	FP238	DY-2x30-450	EL-240		UP9BJ39	◆ Filter
(B)	30	450							■ "
14	30	300	22-1449	FP135	DY-30-450	EL-33	AF6J	UP4AJ29	7F7 Plate Decoup.
15	.002	600	22-1220	TP405	S-6-002	TC-22	684-.002	DT6D2	Audio Coupling
16	.02	200	22-327	TP423	S-4-02	TC-12	484-.02	DT4S2	Osc. Grid Cond.
17	.02	600	22-830	TP412	S-6-02	TC-12	684-.02	DT6S2	Audio Coupling
18	.005	1000	22-1257	TP459	S-10-05	TR-25	1084-.005	MD16D6	6V6 Plate Bypass
19	.02	600	22-830	TP412	S-6-02	TC-12	684-.02	DT6S2	Audio Coupling
20	.05	200	22-829	TP426	S-4-05	TC-15	484-.05	DT4S5	Audio Cath. Bypass
21	.05	600	22-171	TP415	S-6-05	TC-15	684-.05	DT6S5	Audio Plate Feedback
22	.004	600	22-448	TP407	S-6-004	TC-24	684-.004	DT6D4	Tone Compensation
23	.004	600	22-1362	TP407	S-6-004	TC-24	684-.004	DT6D4	Audio Coupling
24	.02	600	22-830	TP412	S-6-02	TC-12	684-.02	DT6S2	6SH7 Plate Bypass
25	.01	600	22-196	TP410	S-6-01	TC-11	684-.01	DT6S1	6SH7 Screen Bypass
26	.01	600	22-196	TP410	S-6-01	TC-11	684-.01	DT6S1	2nd IF Plate Bypass
27	.01	600	22-196	TP410	S-6-01	TC-11	684-.01	DT6S1	2nd IF Screen Bypass
28	.05	200	22-829	TP423	S-4-05	TC-15	484-.05	DT4S5	AVC Bypass
29	.01	600	22-196	TP410	S-6-01	TC-11	684-.01	DT6S1	1st IF Plate Bypass
30	.05	200	22-829	TP426	S-4-05	TC-15	484-.05	DT4S5	1st IF Fil. Bypass
31	.01	600	22-196	TP410	S-6-01	TC-11	684-.01	DT6S1	1st IF Screen Bypass
32	.01	200	22-1396	TP421	S-4-01	TC-11	484-.01	DT4S1	AVC Bypass
33	.01	600	22-196	TP410	S-6-01	TC-11	684-.01	DT6S1	6SB7 Plate Bypass
34	.01	600	22-196	TP410	S-6-01	TC-11	684-.01	DT6S1	RF Bypass Pwr. Supp.
35	.02	400	22-1127	TP423	S-4-02	TC-12	484-.02	DT4S2	Audio Coupling
36	.01	400	22-1126	TP421	S-4-01	TC-11	484-.01	DT4S1	Tone Compensation
37	.02	400	22-1127	TP423	S-4-02	TC-12	484-.02	DT4S2	" "
38	.01	400	22-1126	TP421	S-4-01	TC-11	484-.01	DT4S1	" "
39	.005	200	22-319	TP408	S-6-005	TC-25	484-.005	DT6D5	RF Filter Tuning Eye
40	.005	400	22-1041	TP408	S-6-005	TC-25	484-.005	DT6D5	Line Filter
41	.01	600	22-196	TP410	S-6-01	TC-11	684-.01	DT6S1	Audio Coupling Phono.
42	.01	600	22-196	TP410	S-6-01	TC-11	684-.01	DT6S1	RF Screen Bypass
43	.05	200	22-829	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
44	100	600	22-162	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass
45	50	500	22-1532	MC225	MO.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Feedback
46	50	500	22-1532	MC225	MO.5-45	1FM-45	1468-.00005	5W5Q5	" "
47	500	600	22-1138	MC245	MO.5-35	1FM-35	1468-.0005	5W5T5	Audio Plate Bypass
48	50	500	22-1367	MCB225	MOS.5-45	MS-45	1469-.00005	5R5Q5	6SH7 Grid Cond.
49	100	600	22-162	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Diode
50	100	600	22-365	MCB235	MOS.5-31	MS-31	1469-.0001	5R5T1	RF Bypass Vol. Cont.
51	50	600	22-289	MC225	MO.5-45	1FM-45	1468-.00005	5W5Q5	Tone Compensation
52	50	600	22-289	MC225	MO.5-45	1FM-45	1468-.00005	5W5Q5	" " "
53	100	600	22-162	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	F.M. Ant.
54	750	500	22-242	MC451	MW.5-38	MS-38	1468-.00075	1W5T3	RF Bypass - Phono
55	475		22-87	MC245	MO.5-35	1FM-35	1468-.0005	5W5T5	6SB7 Fil. Bypass
56	1000	600	22-1169	MC255	MW-5-21	1FM-21	1468-.001	1W5D1	6SB7 Screen Bypass
57	50	500	22-1367	MCB225	MOS.5-45	MS-45	1469-.00005	5R5Q5	Osc. Grid Cond.
58	52	500	22-1509	MCB225	MOS.5-45	MS-45	1469-.00005	5R5Q5	FM Fixed Trimmer
59	52	500	22-1509	MCB225	MOS.5-45	MS-45	1469-.00005	5R5Q5	" " "
60	17	500	22-1505	MCB220	MOS.5-42	MS-42	1469-.000025	5R5Q2	" " "
61	35	500	22-1508	MCB223	MOS.5-44	MS-44	1469-.00004	5R5Q4	RF Coupling
62	22	500	22-1506	MCB220	MOS.5-425	MS-425	1469-.000025	5R5Q25	FM Ant. Fixed Trim.

PARTS LIST AND DESCRIPTIONS

CAPACITORS (Cont'd)

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
63	150	300	22-1503	MC236	MO.5-315	1FM-315	1468-.00015	5W5T15	FM Ant. Fixed Pad
64	25.	500	22-1507	MCB220	MOS.5-425	MS-425	1469-.000025	5R5Q25	FM Ant. Coupling
65	10	500	22-1504	MCB15	MOS.5-41	MS-41	1469-.00001	5R5Q1	RF Bypass FM Ant.
66	480	500	22-868	MCB245	MOS.5-35	MS-35	1469-.0005	5R5T5	P.B. Fixed Trimmer

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
67(A)	2.5 Meg	1	63-1349	DTM296	D13-139		Vol. Cont.
(B)	Shaft			SS25	E		Attach to 67A per instructions
(C)	Switch			M26	41		" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
68	15KΩ	½	63-607	BTS-15K	Br.-Grn.-Or. FM Ant. Load
69	100KΩ	½	63-715	BTS-100K	Br.-Blk.-Yl. AVC Network
70	82KΩ	½	63-885	BTS-82K	Gray-Red-Or. Screen Dropping
71	5600Ω	½	63-1448	BTS-5600	Grn.-Blue-Red Plate Load
72	47KΩ	½	63-593	BTS-47K	Yl.-Vi.-Or. Converter Grid
73	120Ω	½	63-626	BW-½-120	Br.-Red-Br. " Cathode
74	220Ω	½	63-579	BW-½-220	Red-Red-Br. Suppressor
75	33KΩ	½	63-712	BTS-33K	Or.-Or.-Or. Osc. Grid
76	1eKΩ	2	63-510	BT-2-1eK	Br.-Gray-Or. Conv. Screen Dropping
77	1000Ω	½	63-605	BTS-1000	Br.-Blk.-Red Conv. Plate Filter
78	100KΩ	½	63-595	BTS-100K	Br.-Blk.-Yl. AVC Network
79	2.2 Meg.	½	63-600	BTS-2.2Meg	Red-Red-Grn. AVC Network
80	68KΩ	½	63-960	BTS-68K	Blue-Gray-Or. 1st IF Screen Dropping
81	1200Ω	½	63-1446	BTS-1200	Br.-Red-Red 1st IF Plate Filter
82	2200Ω	½	63-585	BTS-2200	Red-Red-Red 2nd IF Grid
83	33KΩ	½	63-592	BTS-33K	Or.-Or.-Or. RF Filter
84	120KΩ	½	63-1447	BTS-120K	Br.-Red-Yl. 2nd IF Screen Dropping
85	2200Ω	½	63-803	BTS-2200	Red-Red-Red 2nd IF Plate Filter
86	15KΩ	½	63-603	BTS-15K	Br.-Grn.-Or. Tone Compensation
87	1 Meg.	½	63-441	BTS-1 Meg.	Br.-Blk.-Grn. " "
88	82KΩ	½	63-651	BTS-82K	Gray-Red-Or. " "
89	220KΩ	½	63-296	BTS-220K	Red-Red-Yl. Diode Load
90	33KΩ	½	63-592	BTS-33K	Or.-Or.-Or. RF Filter
91	100KΩ	1	63-380	BTA-100K	Br.-Blk.-Yl. Limiter Screen Dropping
92	33KΩ	½	63-592	BTS-33K	Or.-Or.-Or. Limiter Screen Bleeder
93	100KΩ	1	63-380	BTA-100K	Br.-Blk.-Yl. Limiter Plate Dropping
94	47KΩ	½	63-593	BTS-47K	Yl.-Vi.-Or. Limiter Grid
95	100KΩ	½	63-260	BTS-100K	Br.-Blk.-Yl. Diode Load
96	100KΩ	½	63-260	BTS-100K	" " " "
97	100KΩ	½	63-260	BTS-100K	" " " Deemphasis
98	220KΩ	½	63-296	BTS-220K	Red-Red-Yl. 1st AF Plate Load
99	100KΩ	½	63-595	BTS-100K	Br.-Blk.-Yl. " " " "
100	15 Meg.	½	63-976	BTS-15 Meg.	Br.-Grn.-Blue Output Grid
101	33Ω	½	63-620	BW-½-33	Or.-Or.-Blk. Bias
102	3300Ω	½	63-586	BTS-3300	Or.-Or.-Red Cathode Bias
103	2.2 Meg.	½	63-600	BTS-2.2Meg.	Red-Red-Grn. Tuning Eye Filter
104	1 Meg.	½	63-441	BTS-1 Meg.	Br.-Blk.-Grn. Pre-Amp. Grid Leak
105	47KΩ	½	63-648	BTS-47K	Yl.-Vi.-Or. Pre-Amp. Plate Load
106	15 Meg.	½	63-976	BTS-15 Meg.	Br.-Grn.-Blue Pre-Amp. Grid
107	470KΩ	½	63-597	BTS-470K	Yl.-Vi.-Yl. Pre-Amp. Plate Load
108	2700Ω	½	63-439	BTS-2700	Red-Vi.-Red Pre-Amp. Plate Load
109	33KΩ	½	63-592	BTS-33K	Or.-Or.-Or. Pre-Amp. Plate Filter
110	2200Ω	½	63-585	BTS-2200	Red-Red-Red Inverter Cathode
111	47KΩ	½	63-648	BTS-47K	Yl.-Vi.-Or. Inverter Grid Divider
112	330KΩ	½	63-657	BTS-330K	Or.-Or.-Yl. Inverter Grid Divider
113	47KΩ	1	63-1187	BTA-47K	Yl.-Vi.-Or. Inverter Plate Load
114	470KΩ	½	63-597	BTS-470K	Yl.-Vi.-Yl. Amplifier Grid Load
115	200Ω	2	63-1189	BW-2-200	Red-Blk.-Br. Amplifier Cathode Bias

PARTS LIST AND DESCRIPTIONS

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	ZENITH PART No.	STANCOR PART No.	THORDARSON PART No.	
116	117VAC @ .9 Amp	640VCT@ .105 Amp	4.9V @ 1.9 Amp	6.2V @ 4.3 Amp	95-921	P-4080	T-13R14*	*Use universal mounting brackets supplied with transformer.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
117	11770Ω	3.5Ω	425Ω	.3Ω	Part of 49-533	A-3870	T-13840†		†Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	ZENITH PART No.	JENSEN PART No.		
118	500Ω	3.5Ω	49-533	ST-103#		#Use filter choke in place of field coil of the original. Mount by 3/8" wood screws on the baffle. Change output transformer to match 6-8Ω voice coil.
	CONE DIA.	VC DIA.				
119	11½"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

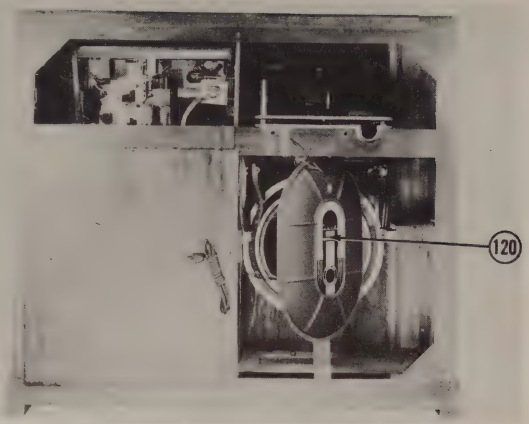
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	
120	Loop Ant.	.2Ω	1Ω	S12111		
121	Ant. Loading Coil		1.3Ω	S12529		
122	SW Ant. Coil		0Ω	S12282		
123	FM Ant. Coil	0Ω	0Ω	S12301		
124	BC Det. Coil	4Ω	8Ω	S12293		
125	SW Det. Coil		0Ω	S12291		
126	FM Det. Coil	0Ω	0Ω	S12302		
127	Wave Trap		40Ω	S12281		
128A	BC Osc. Coil		9.6Ω	S11344		Wound on same form as auto osc. coil
128B	Auto.Osc. Coil		12Ω	S11344		" " " " " BC " "
129	SW Osc. Coil		0Ω	S12292		
130	FM Osc. Coil	0Ω	0Ω	S12303		
131	Input IF	9Ω .6Ω	9Ω .6Ω	S12249		Top figures for 455KC bottom for 8.3MC
132	Inter. IF	9Ω .6Ω	9Ω .6Ω	S12250		" " " " " " "
133	Output IF	9Ω .3Ω	9Ω .6Ω	S12251		" " " " " " "
134	Disc. IF	1.2Ω	1.6Ω	S12252		
135	AC Line RF Choke	0Ω		S12253		
136	Pre-amp Osc.		2Ω	S12603		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					ZENITH PART No.		
137	Bayonet	6-8	0.25	blue	100-36		Type 44
138	"	"	"	"	"		"
139	"	"	"	"	"		"

BACK VIEW



REMOVAL OF POWER SUPPLY, RECEIVER CHASSIS, PHONO PRE-AMP OSCILLATOR, SPEAKER, AND LOOP ANTENNA FOR SERVICE OPERATIONS.

1 - Remove back panel covering phono-changer unit.

2 - Remove tacks holding fiber cable guides.

3 - Disconnect the main cable from the changer unit, phono pre-amp. oscillator unit, and the receiver chassis. Pull the cable through hole in the partition and remove from cabinet.

4 - Remove phono pre-amp. oscillator unit by means of three wood screws holding it to the partition.

5 - Remove small three-pronged fiber plug that connects the loop to the receiver.

6 - Remove the four bolts holding the audio and power supply chassis.

7 - Turn audio and power supply unit so it is possible to remove the speaker cable and the small dial light plug. Remove this chassis.

8 - Remove the tuning eye from its mounting bracket and let it hang free.

9 - Disengage snap fastener holding the automatic tuning bakelite pushbutton assembly by pulling up on small gold tab at the top of the unit.

10- The tone switch assembly is loosened by same type fastener as in Step No. 9.

11- Remove the escutcheon by removing the eight small wood screws.

12- Twist the tone button assembly sufficiently to permit it to go through the opening in the front panel. Lay this assembly across the receiver chassis.

13- Remove the two machine screws holding the automatic tuning assembly. Lower this unit and lay it across the chassis.

14- Remove the two Phillips head screws on each side of the compartment drawer. This releases the receiver chassis.

15- Close the compartment drawer and pull the receiver chassis back to the mid-point of the inside of the cabinet.

16- Open the compartment drawer.

17- Tilt the receiver chassis forward and back the receiver out of the cabinet.

18- Loosen the two screws holding the loop mounting bracket. Lift up until bottom pivot is free of its socket. Pull the 3-wire loop cable from the receiver side of the cabinet and remove the loop.

19- Remove the four nuts holding the speaker and pull speaker free.

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	Pin 8 on convertor tube 6SB7 socket.	455KC modulated	BC	600KC	Across voice coil	A1,A2, A3,A4, A5,A6.	Adjust for maximum output.
"	Pin 1 on RF tube 6AG5 socket.	"	Aut.	Press any button on auto.	"	A7	Adjust for minimum output.
	2 turn loop of wire.	1600KC modulated	BC	1600KC	"	A8	Set osc. to dial scale. Couple 2 turn loop loosely to wave-magnet by spacing.
	"	1400KC modulated	"	1400KC	"	A9,A10	Adjust for maximum output.
400Ω res.	Antenna post (remove line ant.)	11.7MC modulated	SW	11.7MC	"	A11	Set osc. to dial scale.
"	"	"	"	"	"	A12	Adjust for maximum output.
"	"	9.7MC modulated	"	9.7MC	"	A13	Adjust for maximum output. Repeat adjustment as given for A12.
.05 MFD	Pin 4(grid) on 6SH7 limiter socket.	8.3MC unmodulated	FM45		VTVM pin 5 on disc. trans. to chassis.	A14	Adjust for maximum reading
"	"	"	"		VTVM pin 7 on disc. trans to chassis.	A15	Adjust for zero reading. Use enough input signal to get positive & negative indication before setting for zero reading.
"	Pin 4(grid) on 7W7 2nd IF tube socket.	"	"		VTVM 6SH7 limiter grid (pin 4 to chassis)	A16,A17	Adjust for maximum reading
"	Pin 4 (grid) on 6SG7 1st IF tube socket.	"	"		"	A18,A19	Adjust for maximum output. Solder a 300Ω ½ watt resistor across secondary of second IF trans.(pin 2 to 3 of 2nd IF trans.) Use as short leads as possible
"	Pin 8 (grid on 6SB7 convertor tube socket.	"	"		"	A20,A21	"
							Remove 300 ohm ½ watt resistor used above.
270Ω res.	Ant. post (remove line ant.)	98MC unmodulated	FM100	98MC	"	A22	Set osc. to dial scale. Secure shaft with speaker cement.
"	"	"	"	"	"	A23,A24	Adjust for maximum reading. Secure shafts with speaker cement.
"	"	45MC unmodulated	FM45	45MC	"	A25	Set osc. to dial scale.
"	"	"	"	"	"	A26,A27	Adjust for maximum output

Volume control at maximum volume and output from signal generator adjusted just high enough to give output reading. Use insulated alignment screwdriver for adjusting. VTVM (vacuum tube voltmeter) must have 200KΩ isolation resistor connected in series with hot lead. (lead must be shielded).

PUSH BUTTON ADJUSTMENT

Each button and its associated tuning adjustments will tune over a portion of the broadcast band, any station within its tuning range may be selected for automatic tuning on that button.

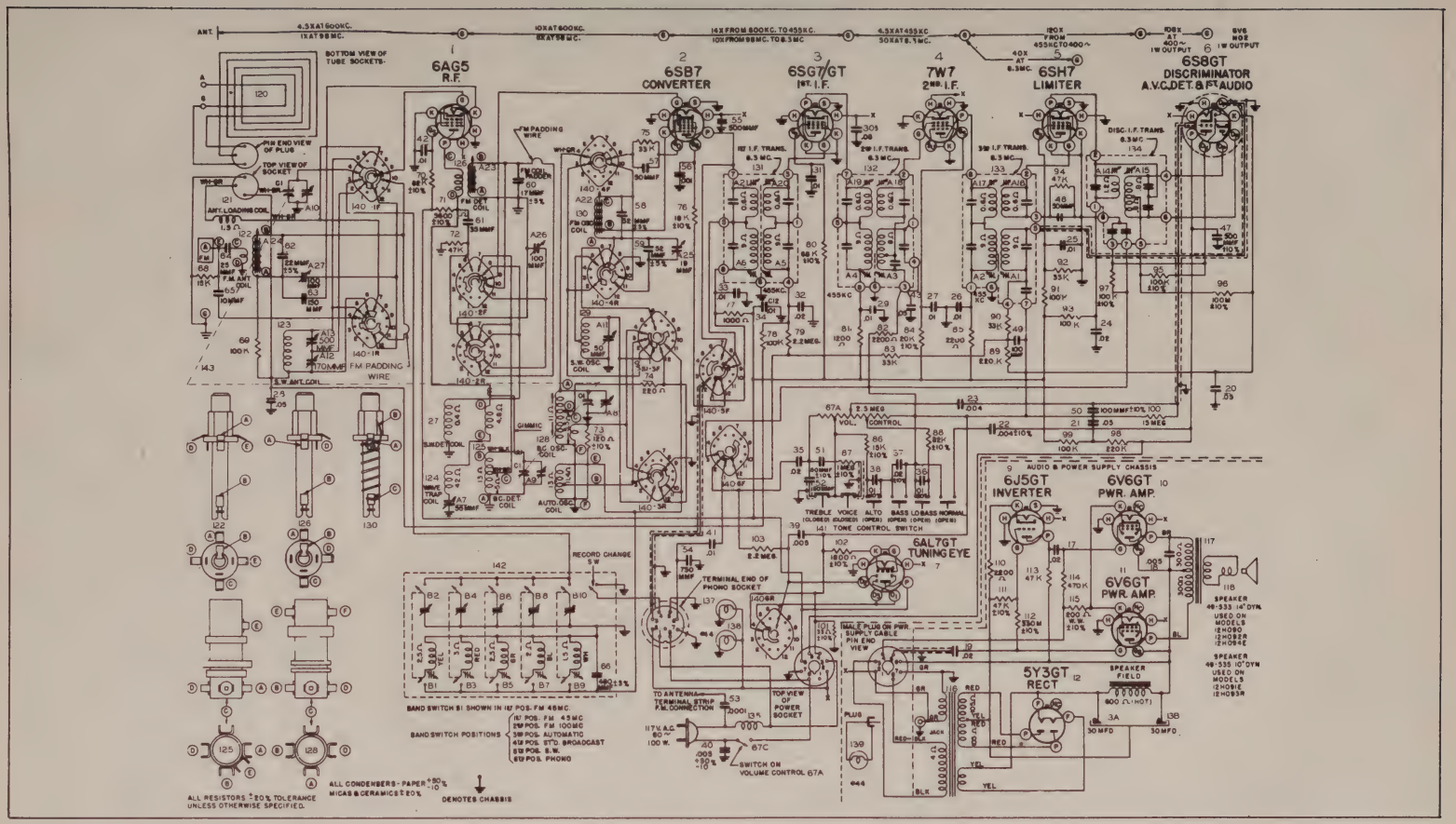
The tuning ranges are as follows:

B1,B2 - 540 to 940KC
B3,B4 - 600 to 1050KC
B4,B5 - 660 to 1150KC
B5,B6 - 740 to 1300KC
B9,B10- 880 to 1600KC

To adjust automatic tuning proceed as follows:

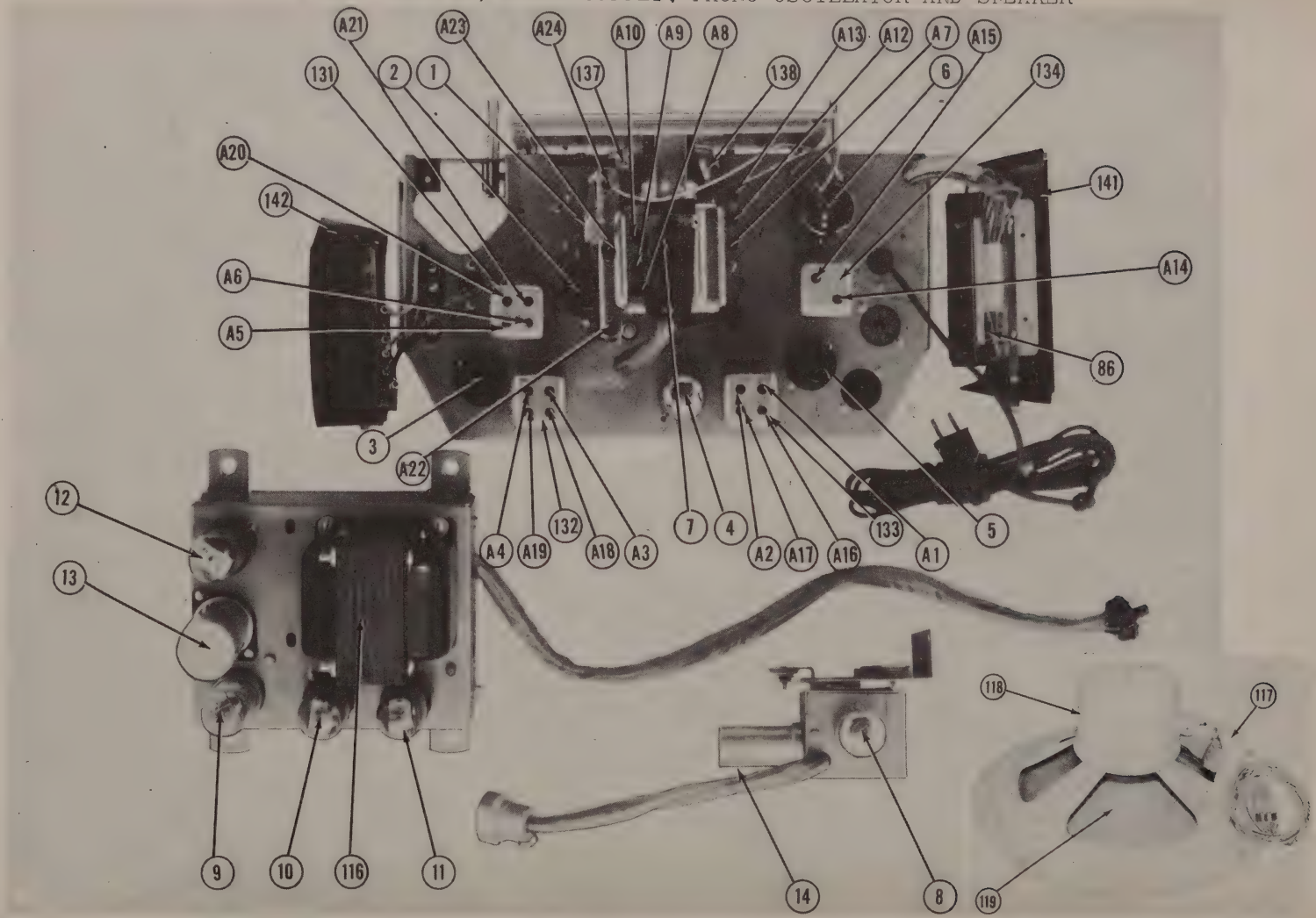
1. Remove the automatic cover plate by pulling up on latch pin and lifting the plate away from the escutcheon.
2. Select a station within the range of B1, B2(540 to 940KC).
3. Turn the band switch to BC and tune in the selected station on the dial -- then turn the band switch to AUT position.
4. Press the lever associated with B1, B2 and tune in the same station by adjusting B1, B2 with the special wrench furnished with the receiver. First adjust the screw (B1) and then the hexagonal nut (B2) to the setting which gives the loudest and clearest signal of the desired station. This will be indicated when the tuning indicator is at its narrowest position. Repeat the operation for greatest accuracy.
5. Follow the above proceedure for setting the remaining buttons. Always select a station within the range of the button being set.
6. Remove the call letters of the stations selected from the call letter sheets furnished with the receiver. Press the top buttons in and slide the call letter tabs into the slots on the push buttons. Replace the automatic cover plate.

SCHEMATIC DIAGRAM

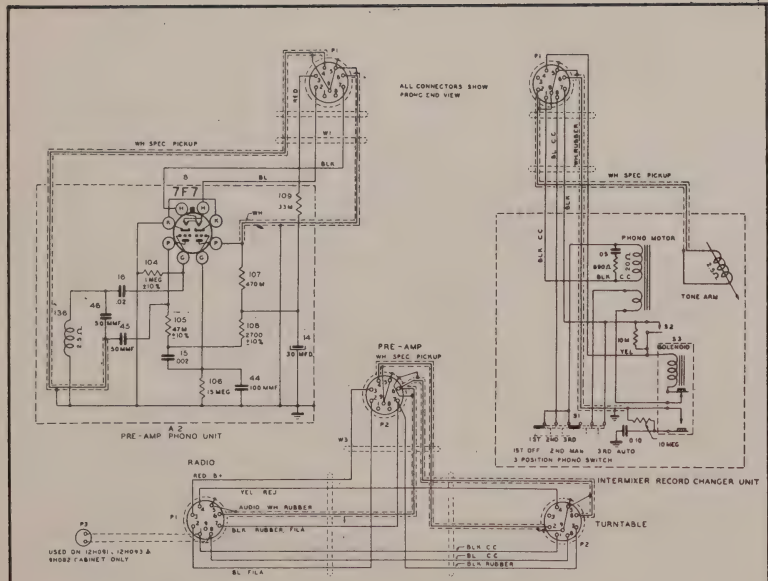


The stage gain measured values listed above are approximate values for average operative stages, rather than absolute values. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3 volt battery bias substituted for measurement.

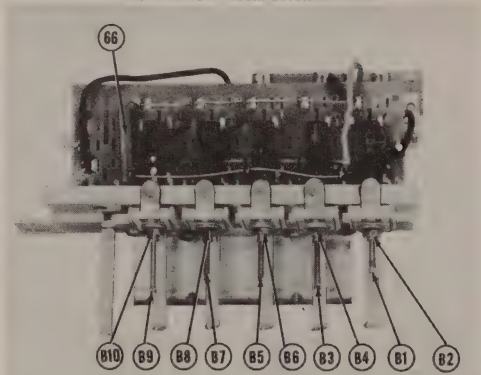
TOP VIEWS CHASSIS, POWER SUPPLY, PHONO OSCILLATOR AND SPEAKER



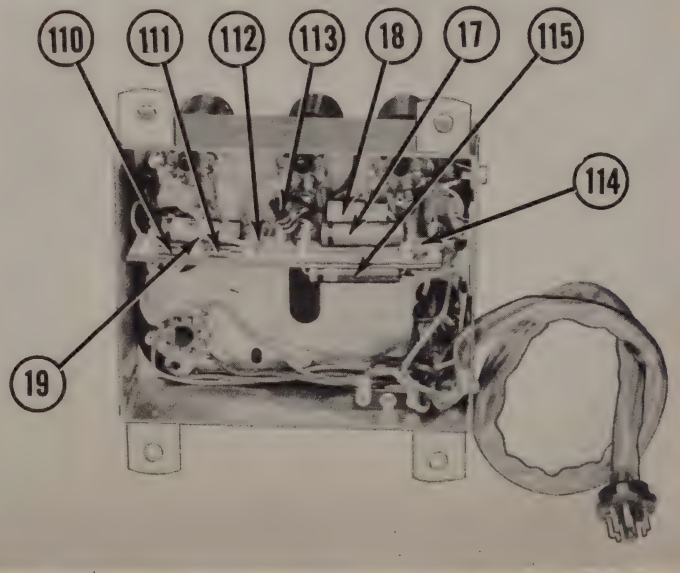
BOTTOM VIEW - RECEIVER CHASSIS



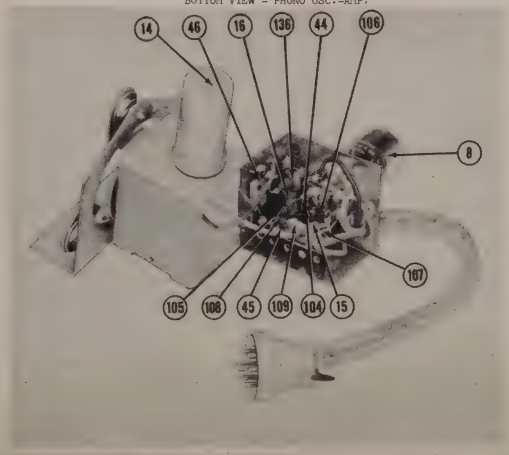
BOTTOM VIEW - PUSH BUTTON ASSEMBLY



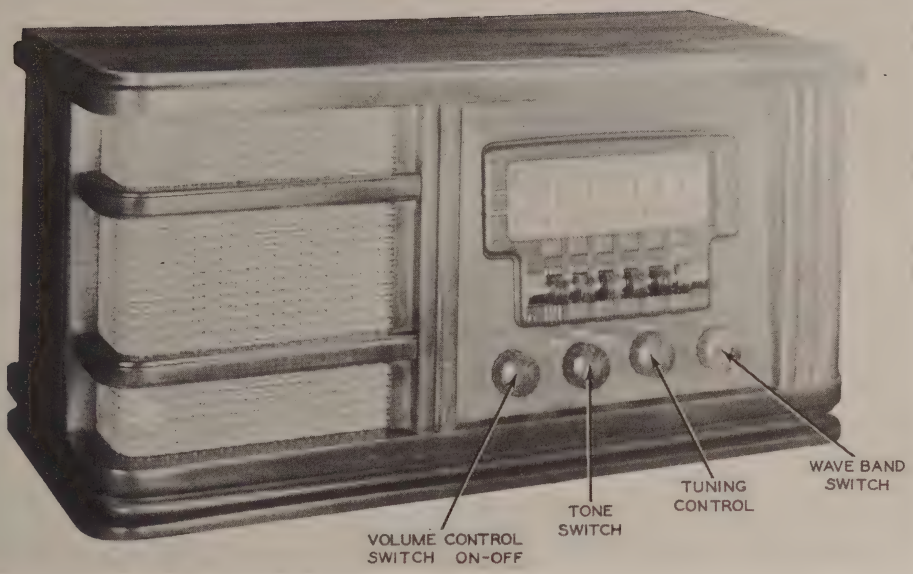
BOTTOM VIEW - POWER SUPPLY



BOTTOM VIEW - PHONO OSC.-AMP.



STEWART-WARNER
MODELS 62T16, 62TC16, 62TC26, 62TC36



STEWART-WARNER MODEL 62TC16

TRADE NAME Stewart-Warner Models, 62T16 (9023-C), 62TC16 (9023D), 62TC26 (9023E), 62TC36 (9023F)
MANUFACTURER Stewart-Warner Corp., 1826 Diversey Parkway, Chicago, Ill.
TYPE SET AC 2 Band Superhet. - Self Contained Loop Ant. - 5 Button Automatic Tuning
TUBES (SIX) Types 6SK7 RF Amp., 6SA7 1st Det.-Osc., 6SF7 IF-2nd Det.-AVC, 6SK7 1st AF Amp., 6K6GT Power Output, 5Y3GT Rectifier.

POWER SUPPLY 117 Volts AC Rating .485 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST 540-1600KC **SHORT WAVE** 9.35-9.88MC

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to signal grid (pin #8) of 6SA7. Low side to chassis.	455KC	BC (clockwise)	Point of no interfering signal.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Repeat.
500 MMFD	High side to external ant. clip on frame. Low side to chassis.	1600KC	"	1600KC	"	A5	Adjust for maximum output.
"	"	"	"	"	"	A6	" " " "
"	"	"	"	"	"	A7	" " " "
"	"	1400KC	"	Tune to 1400 KC signal.	"	57	Adjust position of slug for maximum output.
"	"	"	"	"	"	58	"
"	"	1600KC	"	1600KC	"	A6,A7.	Recheck adjustments for maximum output.
400 res.	"	9.6MC	SW (Counterclockwise)	9.6MC	"	A8	Adjust for maximum output. Check if proper peak has been obtained by setting signal generator to 10.5 MC and tune radio in vicinity of 9.6MC. Image signal should be heard.
"	"	"	"	"	"	A9	Adjust for maximum output. Rock dial slightly.

Remove chassis and loop from cabinet (do not remove loop of wire stapled to cabinet). Replace loop in cabinet and reconnect all leads to loop and wire stapled to cabinet. Stand chassis on one end approximately same distance from loop as when installed in cabinet. Turn tuning control knob clockwise as far as it will go. Dial pointer should be at 1600KC mark on scale. If not, reset correctly. Also check position of slugs on slug tuning assembly as shown on diagram. Push in manual button and leave it in that position during alignment. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: STEWART-WARNER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7	6SK7	8N	
2	1st Det.-Osc.	6SA7	6SA7	8R	
3	IF-2nd Det.-AVC	6SF7	6SF7	7AZ	
4	1st AF Amp.	6SK7	6SK7	8N	
5	Power Output	6K6GT	6K6GT	7S	
6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

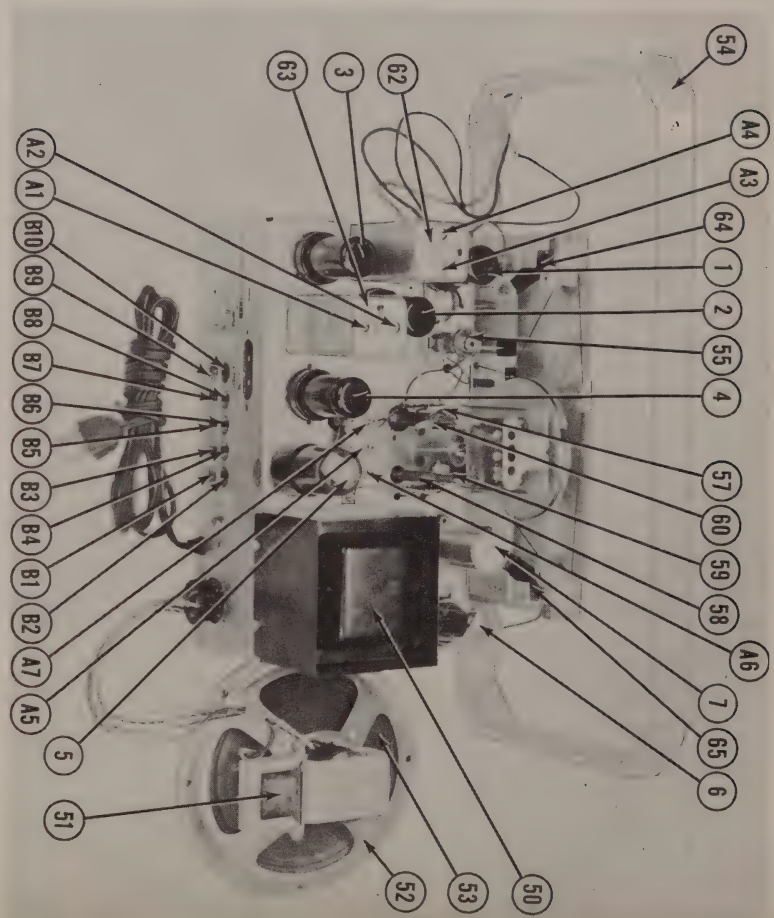
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: STEWART-WARNER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7(A)	20	400	502207	FP339	DY-2x20-450	EL-312		UP6CJ13	■ Filter
(B)	10	400							▲ "
(C)	20	25			M-25-25				
8	.05	600	502154	TP415	S-6-05	TC-15	684-.05	DT6S5	Tone Compensation
9	.004	600	502150	TP407	S-6-004	TC-24	684-.004	DT6D4	6K6 Plate Bypass
10	.02	400	502152	TP423	S-4-02	TC-12	484-.02	DT4S2	Audio Coupling
11	.1	600	502410	TP418	S-6-1	TC-1	684-.1	DT6P1	Audio Plate Decoup.
12	.25	400	502405	TP430	S-4-25	TC-2	484-.25	DT6P25	Negative Feedback
13	.05	400	502157	TP426	S-4-05	TC-15	484-.05	DT4S5	IF Screen Bypass
14	.004	600	502150	TP407	S-6-004	TC-24	684-.004	DT6D4	Audio Coupling
15	.05	400	502157	TP426	S-4-05	TC-15	484-.05	DT4S5	RF Bypass Pwr. Supp.
16	.01	400	502151	TP421	S-4-01	TC-11	484-.01	DT4S1	Osc. Feedback
17	.05	400	502157	TP426	S-4-05	TC-15	484-.05	DT4S5	RF Screen Bypass
18	.1	200	502155	TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
19	.05	200	502153	TP426	S-4-05	TC-15	484-.05	DT4S5	" "
20	120	500	502160	MC236	M0.5-315	1FM-315	1468-.00015	5W5T15	Audio Plate Bypass
21	260	500	502271	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	RF Bypass Diode
22	50	500	502159	MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	Fixed Trimmer
23	50	500	502159	MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Grid Cond.
24	1000	500	502165	MC255	M0.3-21	1FM-21	1468-.001	1W5D1	Cap. Voltage Divider
25	260	500	502271	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	RF Coupling
26	120	500	502884	MC5236	M0S.5-315	1FM-315	1469-.00015	5R5T15	Fixed Trimmer
27	1000	500	502165	MC255	M0.3-21	1FM-21	1468-.001	1W5D1	Screen Bypass P.B.
28	270	500	502161	MC240	M0S.5-325	1FM-325	1469-.00025	5R5T25	Fixed Tuning Osc. P.B.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STEWART-WARNER PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
29(A)	500KΩ	1	502148	MK401	D13-133	AM-60-Z	Volume Control
(B)	Shaft		Not req.	Not req.	E	KSS-3	Attach to 29A per instructions
(C)	Switch		" "	M26	41	SW-A	" " " " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PART No.	IRC PART No.	
30	560Ω	½	502127	BTS-560	Grn.-Blue-Br. RF Cathode
31	100KΩ	½	502132	BTS-100K	Br.-Blk.-Yl. Screen Dropping
32	4700Ω	½	502291	BTS-4700	Yl.-Vi.-Red RF Plate Load
33	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. AVC Network
34	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. " "
35	22KΩ	½	502130	BTS-22K	Red-Red-Or. Osc. Grid
36	33KΩ	1	502466	BTA-33K	Or.-Or.-Or. Screen Dropping
37	2.2 Meg.	½	502135	BTS-2.2 Meg	Red-Red-Grn. AVC Network
38	47Ω	½	502264	BW-½-47	Yl.-Vi.-Blk. IF Cathode
39	68KΩ	½	502437	BTS-68K	Blue-Gray-Or. Screen Dropping
40	47KΩ	½	502131	BTS-47K	Yl.-Vi.-Or. Diode Load
41	4.7 Meg.	½	502468	BTS-4.7 Meg	Yl.-Vi.-Grn. 1st AF Grid
42	2200Ω	½	502128	BTS-2200	Red-Red-Red 1st AF Cathode
43	220KΩ	½	502133	BTS-220K	Red-Red-Yl. 1st AF Plate Load
44	100KΩ	½	502132	BTS-100K	Br.-Blk.-Yl. 1st AF Plate Filter
45	2.2 Meg.	½	502135	BTS-2.2 Meg	Red-Red-Grn. Screen Dropping
46	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. Output Grid
47	330Ω	2	502137	BW-2-330	Or.-Or.-Br. Output Bias
48	4700Ω	½	502291	BTS-4700	Yl.-Vi.-Red Tone Compensation
49	560Ω	½	502127	BTS-560	Grn.-Blue-Br. Tone Compensation

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	STEWART-WARNER PART No.	STANCOR PART No.	THORDARSON PART No.	
50	117v. @ .468A	300V-CT @ .068A	5V @ 1.52A	6.2V @ 2.02A	502174	P-8120*	T-13S20*	*Drill new mounting holes.

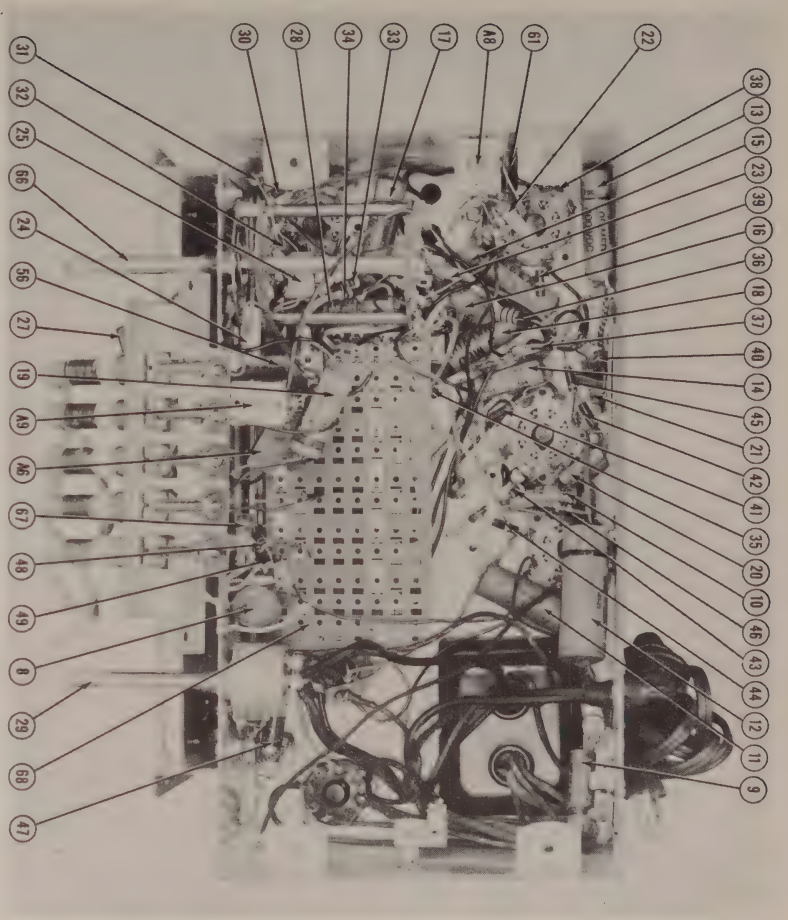
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		STEWART-WARNER PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
51	7370Ω	3.2Ω	630Ω	.6Ω	504122 504061 502170	A-3878†	T-13S37†		†Solder to bracket same as the original. Used with speaker A-502138 Used with speaker R-502168

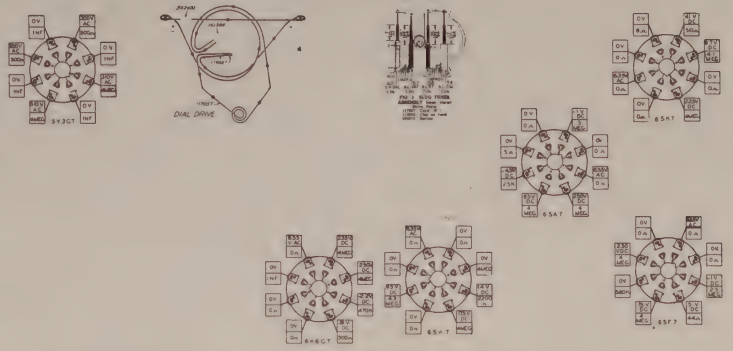
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			STEWART-WARNER PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
52	1000Ω	3.2Ω	D-502168	ST-431		Used with output transformer 504122
	CONE DIA.	VC DIA.				
53	6-3/16"	1/2"	504123			
	Speaker		M-502168			Used with output transformer 504061
	Cone		504062			" " " " "
	Speaker		A-502138			Used with output transformer 502170
	Cone		502169			" " " " "

CHASSIS—BOTTOM VIEW



VOLTAGE AND RESISTANCE ANALYSIS CHART



1 - Use the 600KC signal with 400-cycle modulation connected as shown. (Use nearby frequency if local station interferes.)

2 - For RF and IF measurements connect negative terminal of 3-volt battery to AVC lead and positive terminal to B-. IMPORTANT-Disconnect battery when measuring audio stage gains.

3 - Be sure receiver is carefully tuned to generator signal. (Use weak signal for sharp tuning.)

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PARTS LIST AND DESCRIPTIONS

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA STEWART-WARNER PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
54(A)	Loop Ant.	0Ω	0Ω	502436		Used with Models 62TC13, 62TC35, 62TC26
54(B)	Loop Ant.	0Ω	0Ω	502247		" " Model 62T16
55	BC Ant. Coil	0Ω	0Ω	502122		For Automatic Tuning
56	SW Ant. Coil	2Ω	0Ω	504296		
57	BC Ant.Coup.	1Ω	9Ω	504210		Part of 504294(Comp.Tuning Assy.)
58	BC RF Coup.	4.75Ω		504214		" " " " " "
59	BC Osc. Coil	.5Ω	0Ω	504295		" " " " " "
60	SW Osc. Coil	0Ω		504342		" " " " " "
61	SW Osc. Coil	.2Ω		502111		
62	Input IF	19Ω	18.5Ω	502102	13-6658	
63	Output IF	20.5Ω	20.5Ω	502103	13-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA STEWART-WARNER PART No.		INSTALLATION NOTES
64	Bayonet	6-8	.25	Blue	110629		#44
65	"	6-8	.25	Blue	110629		#44

MISCELLANEOUS

ITEM No.	PART NAME	STEWART-WARNER PART No.	NOTES
66	Band Switch	502147	
67	Tone Switch	502146	
68	PB Switch	502177	Pushbutton Automatic Tuning
	Tun. Assembly	502025	Complete Coil & Trimmer Assby. for Aut. Tuning.
	Clamp	119559	Dial Glass
	Dial Scale	504293	Glass
	Knob	501449	Volume or Tuning (62T16)
	"	501458	Tone or Band Switch (62T16)
	"	501498	Volume or Tuning (62TC16, 62TC26, 62TC36)
	"	501499	Tone or Band Switch " " "
	PB Knob	501497	Automatic Tuning (62T16)
	" "	501651	" " (62TC16, 62TC26, 62TC36)

The five push buttons from left to right (facing front of receiver) cover the following frequencies in order:
540 to 1000KC, 650 to 1300KC, 650 to 1300KC, 975 to 1600KC, 975 to 1600KC.
To set the individual push buttons on the desired stations proceed as follows:

1. Select a station within the frequency range of B1 and B2 (540 to 1000KC) and tune in the station using manual tuning.

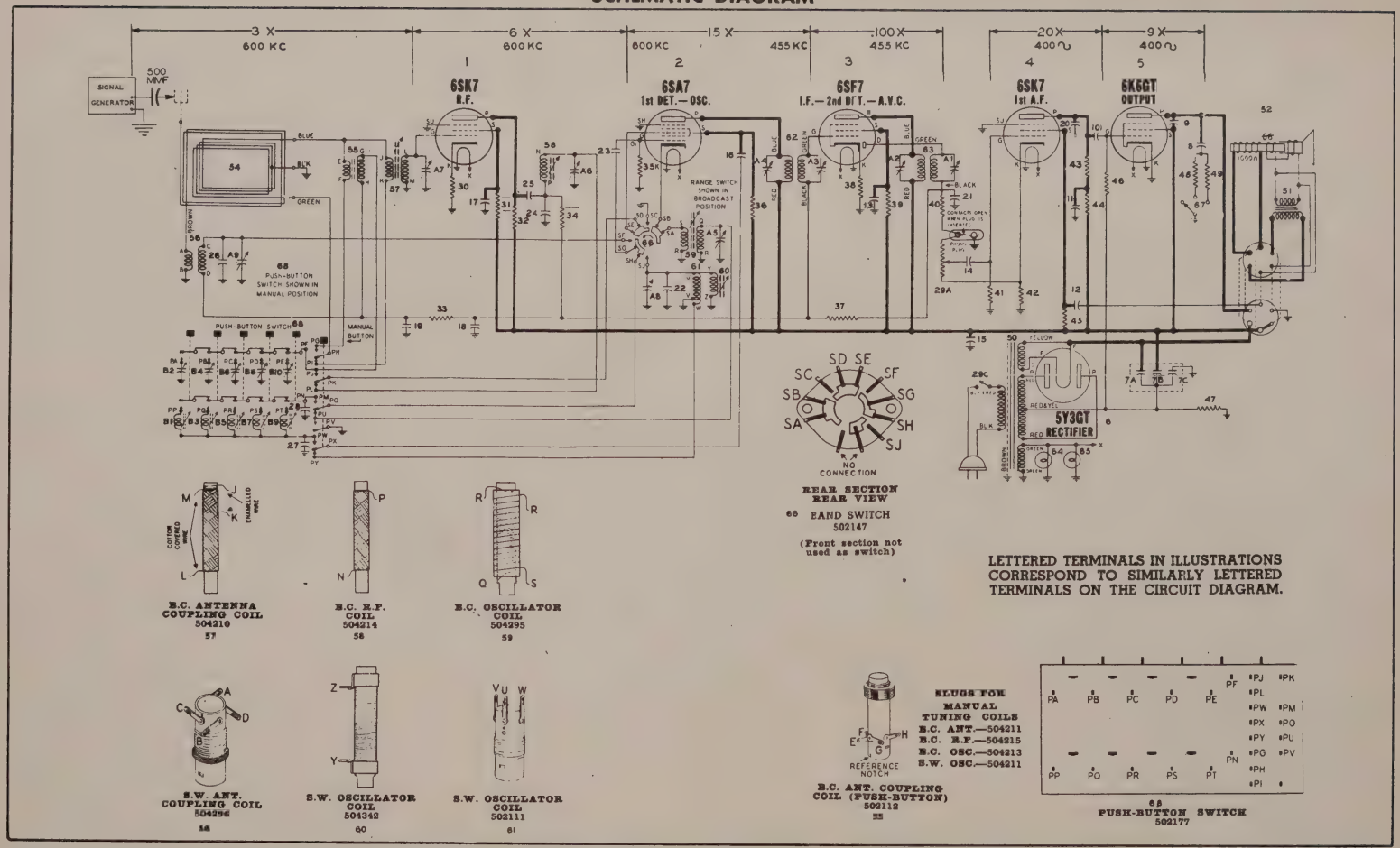
2. Press in push button corresponding to B1 and B2 which is the one on the left (facing front of receiver).

3. Adjust B1 to tune in the desired station. Turning the adjustment counter clockwise increases the frequency.

4. Adjust B2 for maximum volume of the selected station.

5. Proceed in the same order in setting the remaining push buttons. Always select a station within the frequency range of the corresponding push button adjustments. B3, B5, B7, and B9 are adjusted to tune in station. B4, B6, B8 and B10 are adjusted for maximum volume of selected station.

SCHEMATIC DIAGRAM



REAR SECTION REAR VIEW

66 BAND SWITCH 502147

(Front section not used as switch)

LETTERED TERMINALS IN ILLUSTRATIONS CORRESPOND TO SIMILARLY LETTERED TERMINALS ON THE CIRCUIT DIAGRAM.

B.C. ANTENNA COUPLING COIL 504210 57

B.C. R.F. COIL 504214 58

B.C. OSCILLATOR COIL 504295 59

S.W. ANT. COUPLING COIL 504296 56

S.W. OSCILLATOR COIL 504342 60

S.W. OSCILLATOR COIL 502111 61

B.C. ANT. COUPLING COIL (PUSH-BUTTON) 502112 55

SLUGS FOR MANUAL TUNING COILS

B.C. ANT.—504211
B.C. R.F.—504215
B.C. OSC.—504213
S.W. OSC.—504211

68 PUSH-BUTTON SWITCH 502177

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. The following precautions should be observed in making stage gain measurements for this set.

MOTOROLA
MODELS 55X11A, 55X12A, 55X13A

MOTOROLA MODEL 55X13A

TRADE NAME	MOTOROLA, MODEL 55X11A, 55X12A, 55X13A (Ch. HS-50)
MANUFACTURER	Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Illinois
TYPE SET	AC-DC Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE)	Types 12SA7 Converter, 12SK7 Amp., 12SQ7 Det.-AVC-1AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	117 Volts AC-DC Rating .255 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1620KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to pin #8 (signal grid) of 12SA7. Low side to B-.	455KC	Low freq. end of dial.	Across voice coil.	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and receiver B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
"	"	1620KC	High freq.end of dial.(rotors out of mesh)	"	A5	"
200MMFD	High side to ant. terminal back of loop assembly. Low side to B-.	1400KC	Tune in 1400 KC signal.	"	A6	Adjust for maximum output.

Check dial pointer by turning rotors to full mesh and dial pointer should be over mark on dial back plate at the extreme left (facing front of receiver). Volume control at maximum and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		MOTOROLA PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-1AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AB	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MOTOROLA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
6(A)	20	150	23A70008	TCD45	M-2x20-150	TA-220	PRS150-20-20	BRD2215	Filter-Red Dot
(B)	20	150							"
7	.05	400	8S9813-D	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
8	.15	200	8A-72686	TP417	S-4-2	TC-2	484-.15	DT4F2	Line Isolating
9	.02	400	8S-9802	TP423	S-4-02	TC-12	484-.05	DT4S2	50L6 Plate Bypass
10	.01	400		TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
11	.01	400		TP421	S-4-01	TC-11	484-.01	DT4S1	" "
12	.05	400	8S9816-D	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
13	250	500		MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate bypass
14	250	500		MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	RF Bypass Diode

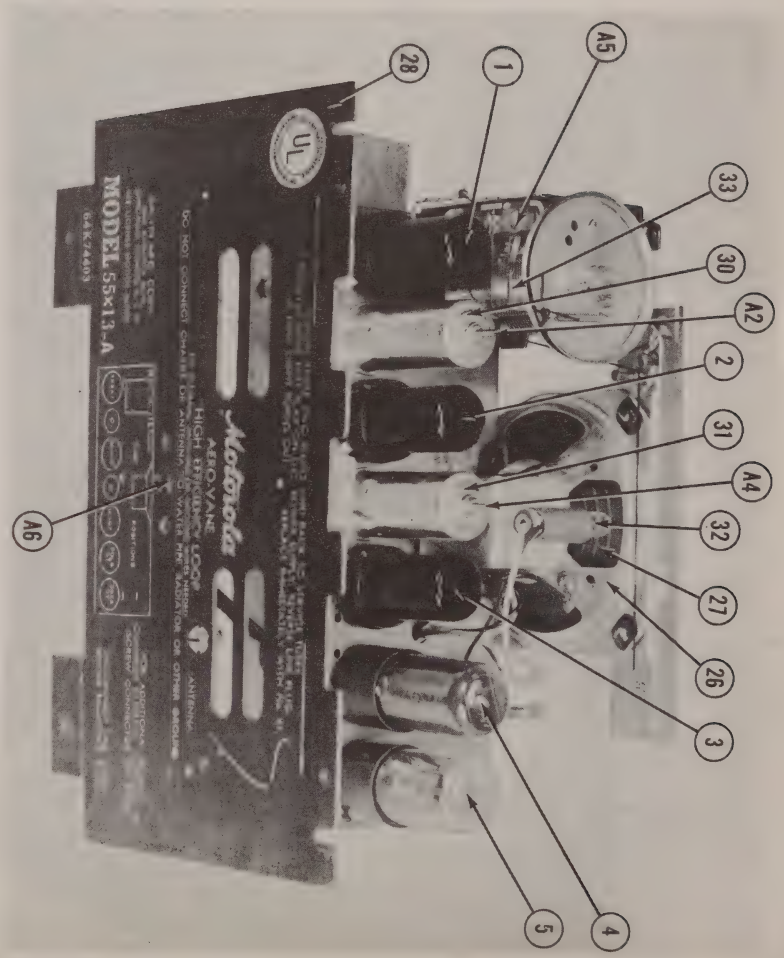
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
15(A)	1 Meg.	1	16A70032-A	MK402	D13-137	AM-63-Z	Volume Control
(B)	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 15A per instructions
(C)	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	
16	22KΩ	½		BTS-22K	Red-Red-Or. Osc. Grid
17	220KΩ	½		BTS-220K	Red-Red-Yl. Line Isolating
18	39Ω	½		BW-½-39	Or.-White-Blk. IF Cathode
19	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC NetWork
20	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Diode Load
21	3.3 Meg.	½		BTS-3.3 Meg	Or.-Or.-Grn. 1st AF Grid
22	220KΩ	½		BTS-220K	Red-Red-Yl. " " Plate Load
23	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
24	150Ω	½		BW-½-150	Br.-Grn.-Br. " Cathode

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
25	2610Ω	3Ω	240Ω	.76Ω	25B70063	A-3876†	T-13842†		†Mount the transformer on top of chassis in space near the speaker.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	MOTOROLA PART No.	JENSEN PART No.		
26	PM	3Ω	50B70076	ST-537*		*Improvise mounting assembly
	CONE DIA.	VC DIA.				
27	4"	½"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	
28(A)	Loop Ant.		2.5Ω	24K74406		Used with Model 55X11A
28(B)	Loop ant.		2.3Ω	24K74408		" " " 55X13A
29	Osc. Coil	1Ω	8.5Ω		14-1040	
30	Input IF	8.75Ω	15.2Ω			
31	Output IF	15.4Ω	15Ω			

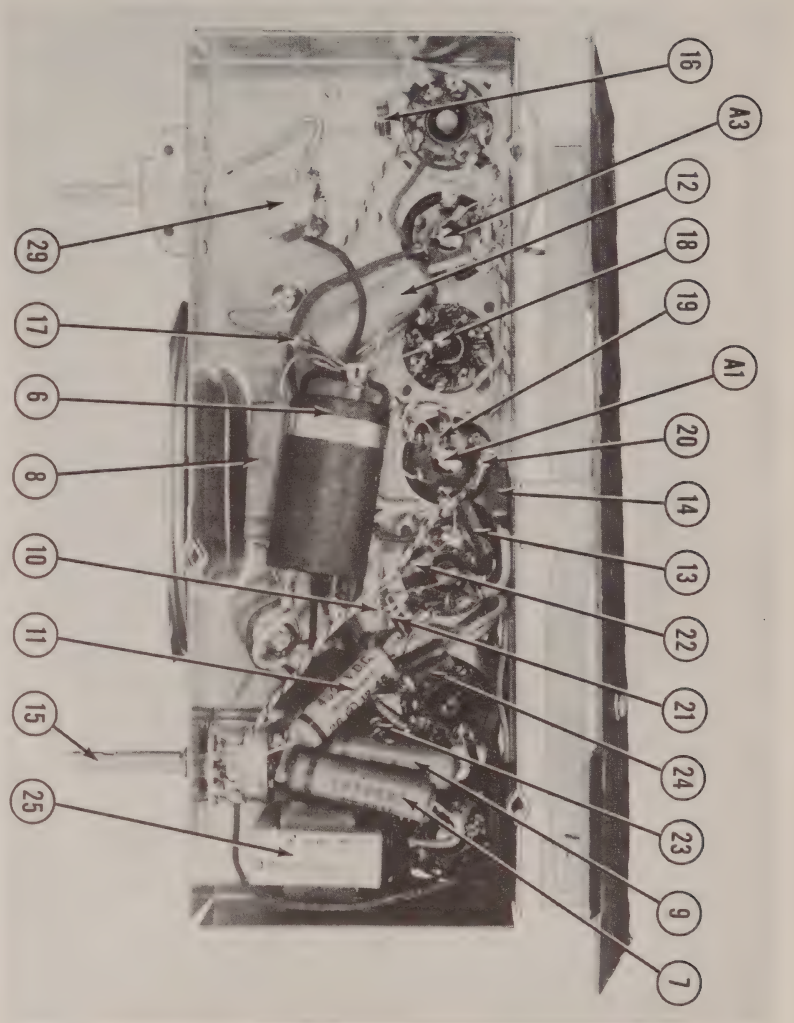
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MOTOROLA PART No.		
32	Bayonet	6-8	.15	Brown			Type 47

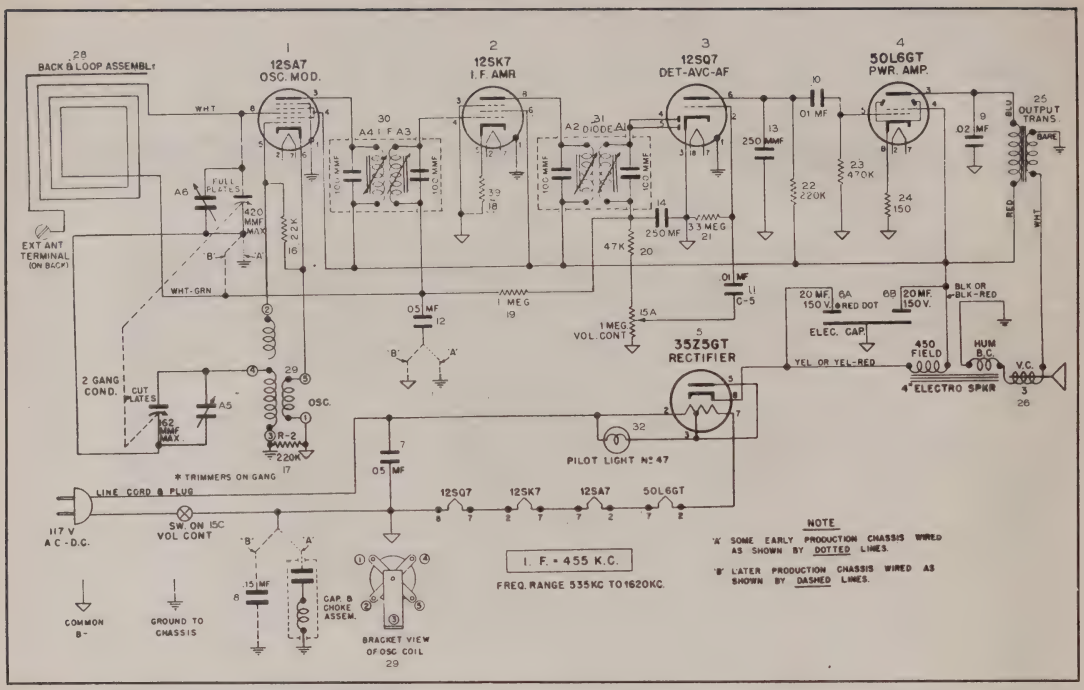
MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
33	Tuning Cap. Bracket	273G02 7b72775	2 Gang Variable with Trimmer Gang Capacitor Mounting

CHASSIS—BOTTOM VIEW

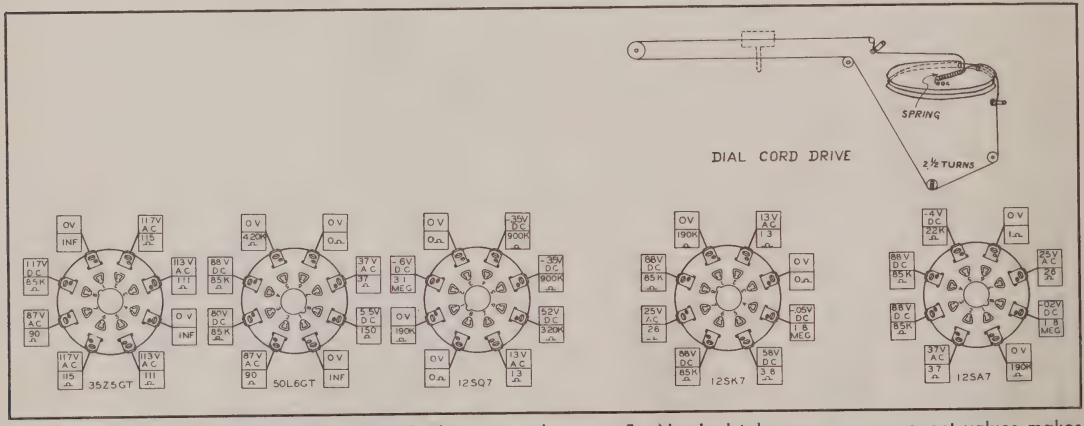


SCHEMATIC DIAGRAM



Stage gain measurements are omitted at the request of the manufacturer.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1. DC voltage measurements are at 20,000 ohms per volt; AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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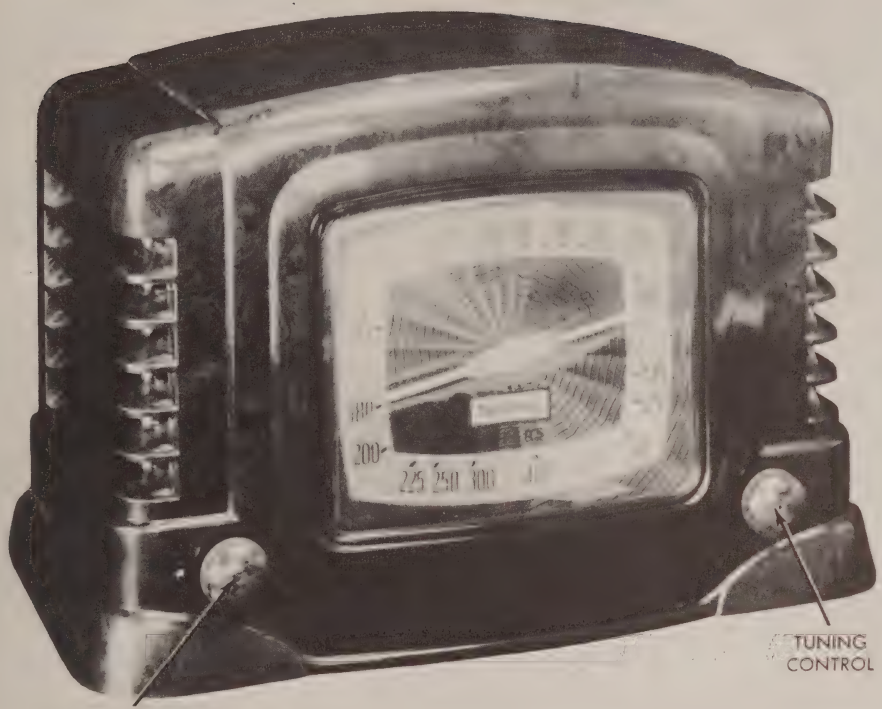
TRUETONE
MODEL D 2661



TRUETONE
MODEL D 2661

TRUETONE MODEL D2661

TRADE NAME	Truetone Model D2661 (Factory Model 4B19)
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Missouri
TYPE SET	Battery Powered Superheterodyne
TUBES (FOUR)	Types 1A7GT Converter, 1N5GT IF Amp., 1H5GT Det.-AVC-AF, 3Q5GT Power Output
POWER SUPPLY	Battery 1½ volts "A" and 90 Volts "B" Rating .240 Amps. @ 1½ Volts, .0134 @ 90 Volts
TUNING RANGE—BROADCAST	540-1700KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to grid (top cap) of 1A7GT. Low side to chassis.	455KC	High freq.end of dial. Iron cores all the way out.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
"	"	1700KC	"	"	A5	" " " "
200 MMFD	High side to ant. lead. Low side to chassis.	"	"	"	A6	" " " "
"	"	1400KC	1400KC	"		Adjust position of antenna coil for maximum output. Repeat this adjustment and the adjustment as given for A6 for best results.

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		TRUETONE PART No.	STANDARD REPLACEMENT		
1	Converter	1A7GT	1A7GT	7Z	
2	IF Amp.	1N5GT	1N5GT	5Y	
3	Det.-AVC-AF	1H5GT	1H5GT	5Z	
4	Power Output	3Q5GT	3Q5GT	7AP	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	TRUETONE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
5(A)	10	150	119117	TC42	M-12-150	UT-121	PRS150-12	BR1215	Bypass Plate Supp.
(B)	.5	200	C-8D-11270	TP431	S-4-5	TC-5	484-.5	DT4P5	Bypass Plate Supp.*
6	.005	600	1007	TP408	S-6-005	TC-25	684-.005	DT6D5	3Q5 Plate Bypass
7	.02	400	10026	TP423	S-4-02	TC-12	484-.02	DT4S2	Audio Coupling
8	.003	600	10012	TP406	S-6-003	TC-23	684-.003	DT6D3	" "
9	.25	200	1006	TP430	S-4-25	TC-2	484-.25	DT4P25	RF Bypass Plate Supp.
10	.5	120	10017	TP431	S-4-5	TC-5	484-.5	DT4P5	Filament Bypass
11	.05	200	10022	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
12	.05	200	10022	TP426	S-4-05	TC-15	484-.05	DT4S5	Screen Bypass
13	.001	200	100122	TP404	S-6-001	TC-21	484-.001	DT6D1	AVC Filter
14	100	500	12940	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	Audio Plate Bypass
15	100	500	12940	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Diode
16	250	500	12912	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Osc. Grid Cond.
17	300	600	129114	MC241	M0.5-33	MS-33	1468-.0003	5W5T3	Ant. Coupling
18	45	500	129177						Fixed Trimmer

* Used in Later Models

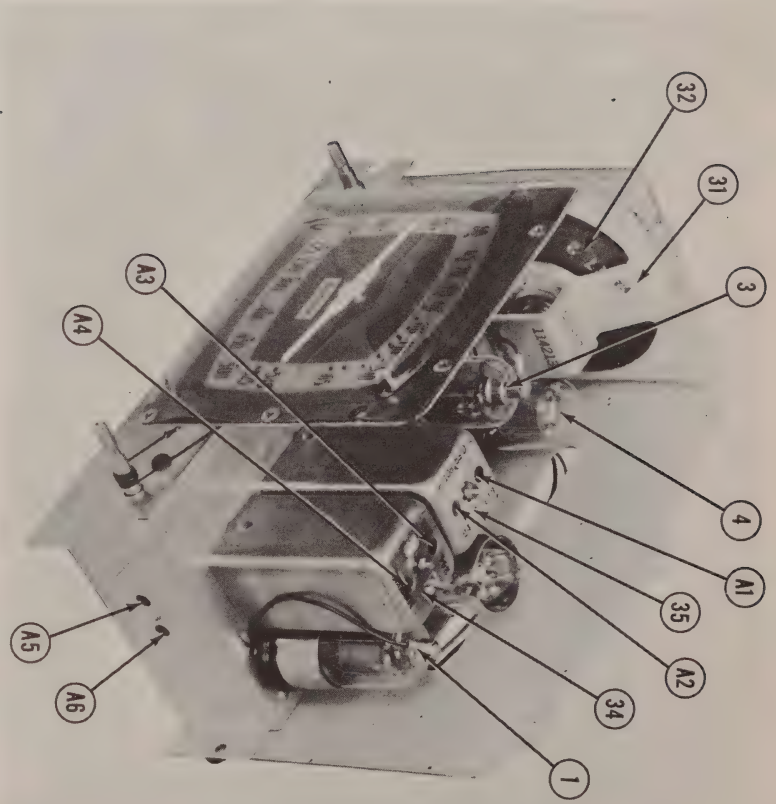
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
19(A)	1 Meg Ω	1	101210	MK402	D13-137	A1-63-2	Volume Control
(B)	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 19A per instructions.
(C)	Switch		" "	M27 -	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	TRUETONE PART No.	IRC PART No.	
20	10KΩ	½	C-9B1-74	BTS-10K	Br.-Blk.-Or. Ant. Loading
21	3.3 Meg.	½	C-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
22	220KΩ	½	C-9B1-27	BTS-220K	Red-Red-Yl. Osc. Grid
23	39KΩ	½	C-9B1-81	BTS-39K	Or.-White-Or. Screen Dropping
24	3.3 Meg.	½	C-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
25	4.7 Meg.	½	C-9B1-35	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
26	1 Meg.	½	C-9B1-98	BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Plate Load
27	1.8 Meg.	½	C-9B1-101	BTS-1.8 Meg.	Br.-Gray-Grn. Output Grid
28	390Ω	½	C-9B1-57	BW-½-390	Or.-White-Br. Bias
29	.56	½	130346	BW-½-.56	Grn.-Blue-Silver Series Filament

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
30	8700Ω	3.2Ω	460Ω	.57Ω	10591	A-3876	T-14884		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	TRUETONE PART No.	JENSEN PART No.		
31	P/M	3.2Ω	114213	ST-113		
	CONE DIA.	VC DIA.				
32	4"	2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

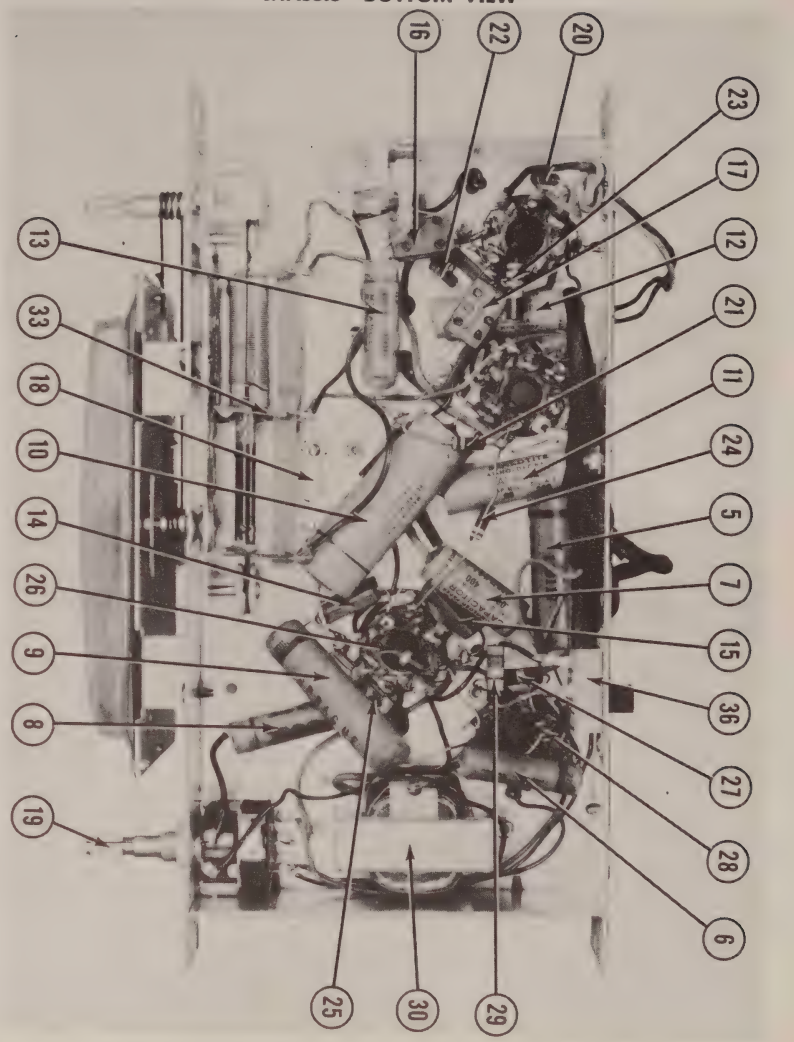
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	
33	Tuning Assy.			13613		Ant. and Osc. Coils Slug Tuned-Ganged
34	Input IF	31.5Ω	29Ω	108202B	16-6658	Drill new Mounting Holes
35	Output IF	30Ω	30Ω	108153C	16-6660	" " " "

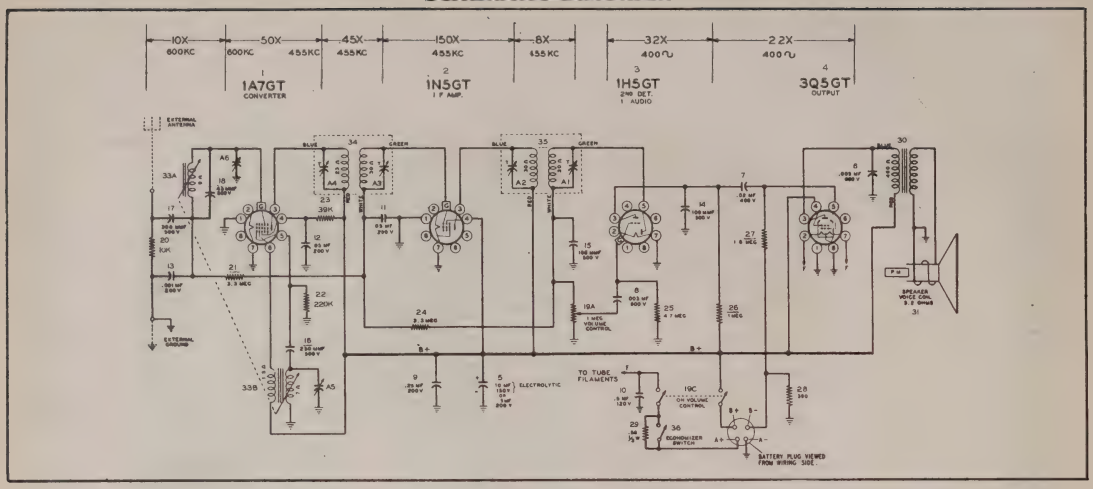
MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
	Cable	107364	Battery Cable Assembly
	Scale	112924	Dial
	Crystal	112824	"
	Cabinet	112501-36	
	Knob	112499-36	Tuning
	"	112499B-36	Volume

CHASSIS—BOTTOM VIEW

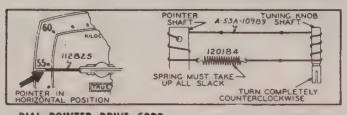


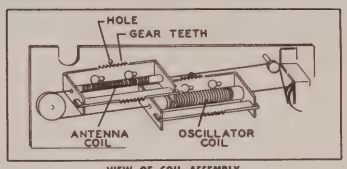
SCHEMATIC DIAGRAM

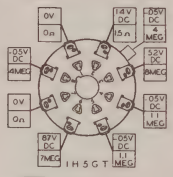


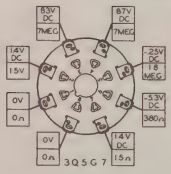
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting to ground the junction point of the two 3.3 meg. resistors.

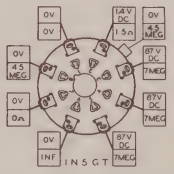
VOLTAGE AND RESISTANCE ANALYSIS CHART

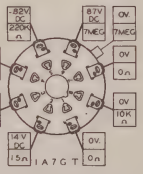












1 - DC Voltage measurements are at 20,000 ohms per volt:

2 - Socket connections are shown as bottom views.

3 - Measured values are from socket pin to common negative.

4 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.

5 - Volume control at maximum, no signal applied for voltage measurements.

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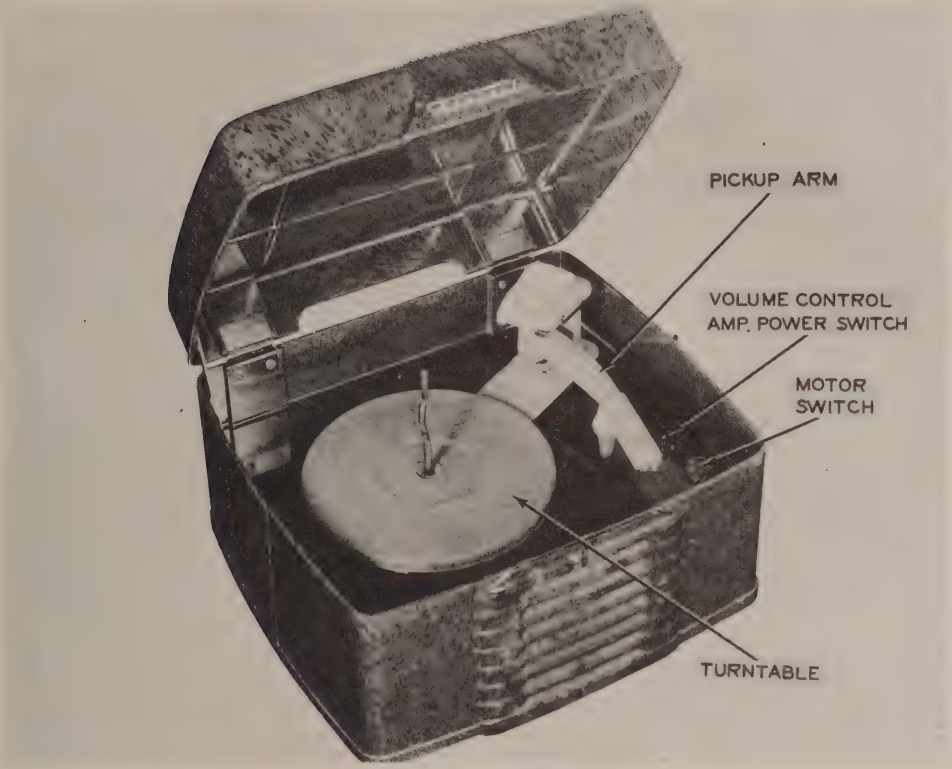


ADMIRAL MODEL 6RP48-3A1

TRADE NAME	Admiral Model 6RP48-3A1 (RC160 Automatic Record Changer)
MANUFACTURER	Admiral Corp., 3800 Cortland St., Chicago 47, Illinois
TYPE SET	AC Automatic Record Player
TUBES (THREE)	Types- 14B6 Amplifier, 50A5 Power Output, 30Y4 Rectifier.
POWER SUPPLY	110-120 Volts AC Rating .640 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS

ADMIRAL
6 RP 48-3 A 1

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Amplifier	14D6	14B8	8W	
2	Power Output	50A5	50A5	3FA	
3	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
4(A)	30	150	67A8	TN129	DHN-2x30-150	TA-330	PRS150-40-40	BZ42215	Filter-Yellow
(B)	30	150							" -Red
(C)	20	150			M-20-150	UT-201	PRS150-20		" -Blue
5	.02	400	64B1-24	TP423	S-4-02	TC-12	484-.02	DT4S2	50A5 Plate Bypass
6	.01	400		TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
7	.005	600		TP408	S-6-005	TC-25	684-.005	DT6D5	" "
8	.05	400	64B1-22	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
9	.1	400	64B1-20	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolating
10	.1	400	64B1-20	TP428	S-4-1	TC-1	484-.1	DT4P1	Phono Coupling

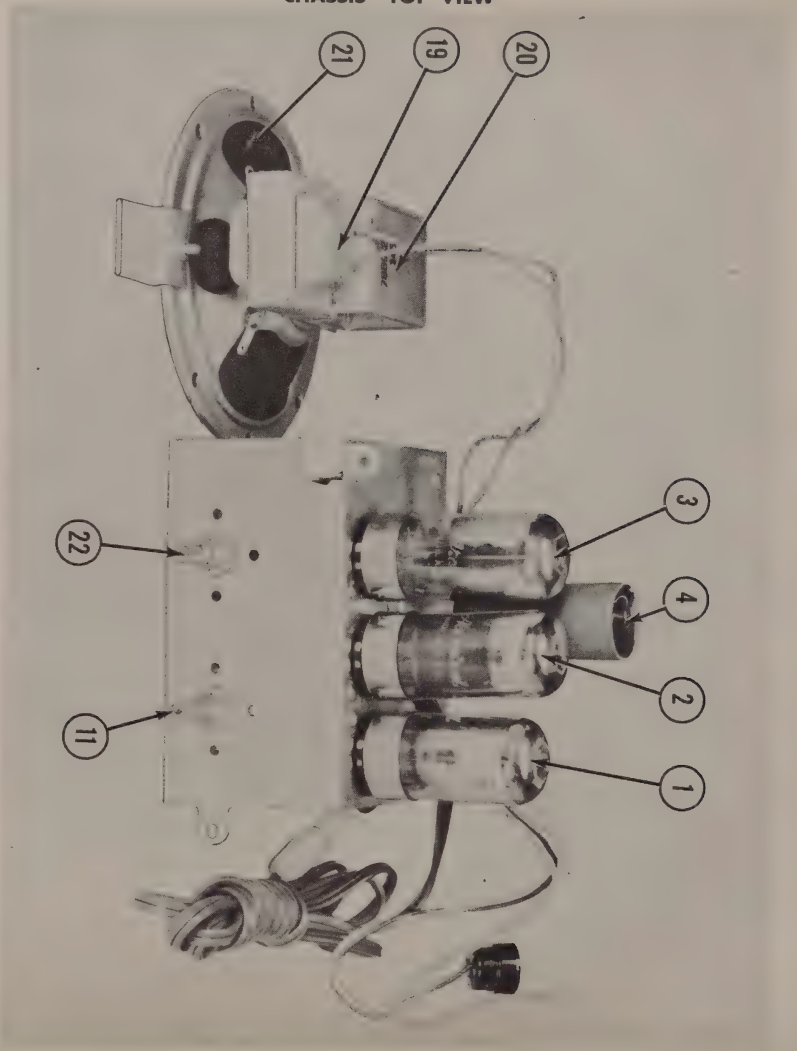
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
11(A)	1 Meg.	1	75B1-9	MK402	D13-137	AM-63-Z	Volume Control
(B)	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 11A per instructions
(C)	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	IDENTIFICATION CODES
12	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Grn. 1st AF Grid
13	270KΩ	1		BTA-270K	Red-Vi.-Yl. 1st AF Plate Load
14	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
15	150Ω	1		BW-1-150	Br.-Grn.-Br. Output Cathode
16	1500Ω	1		BTA-1500	Br.-Grn.-Red Filter
17	125Ω	10	61A3-4		Line Dropping
18	33Ω	1		BW-1-33	Or.-Or.-Blk. Rectifier Ballast

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

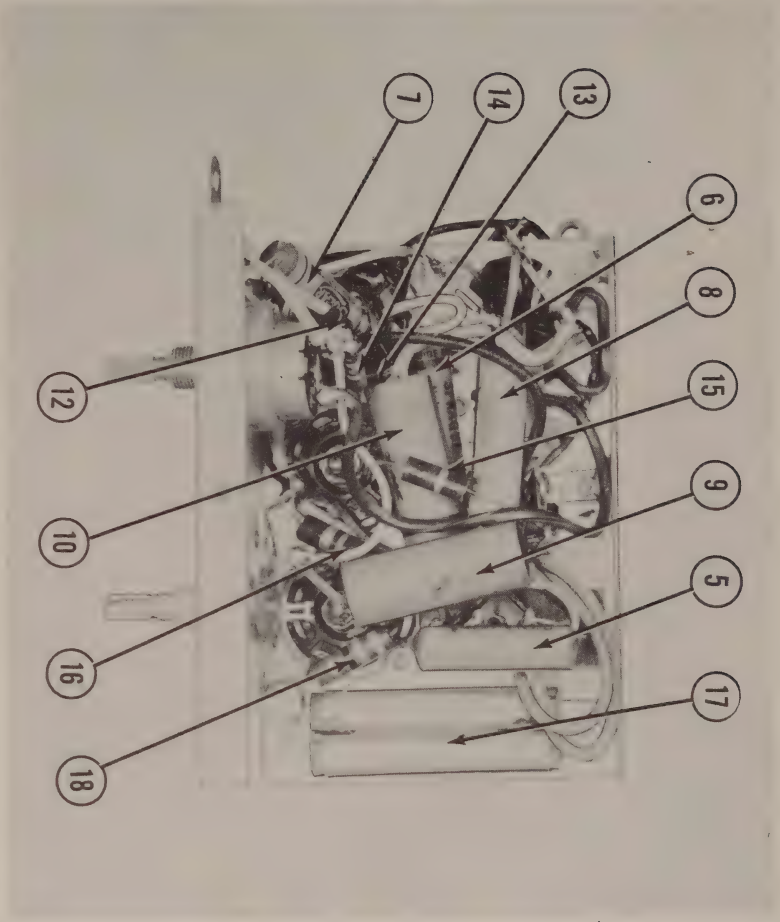
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ADMIRAL	STANCOR	THORDAR'N		
	PRI.	SEC.	PRI.	SEC.	PART No.	PART No.	PART No.		
19	3400Ω	2.9Ω	265Ω	.1Ω	Part of 75P2-2	A-3856†	T-13S49†		†Bend mounting tabs down; file out mounting holes and mount on the original brkt.

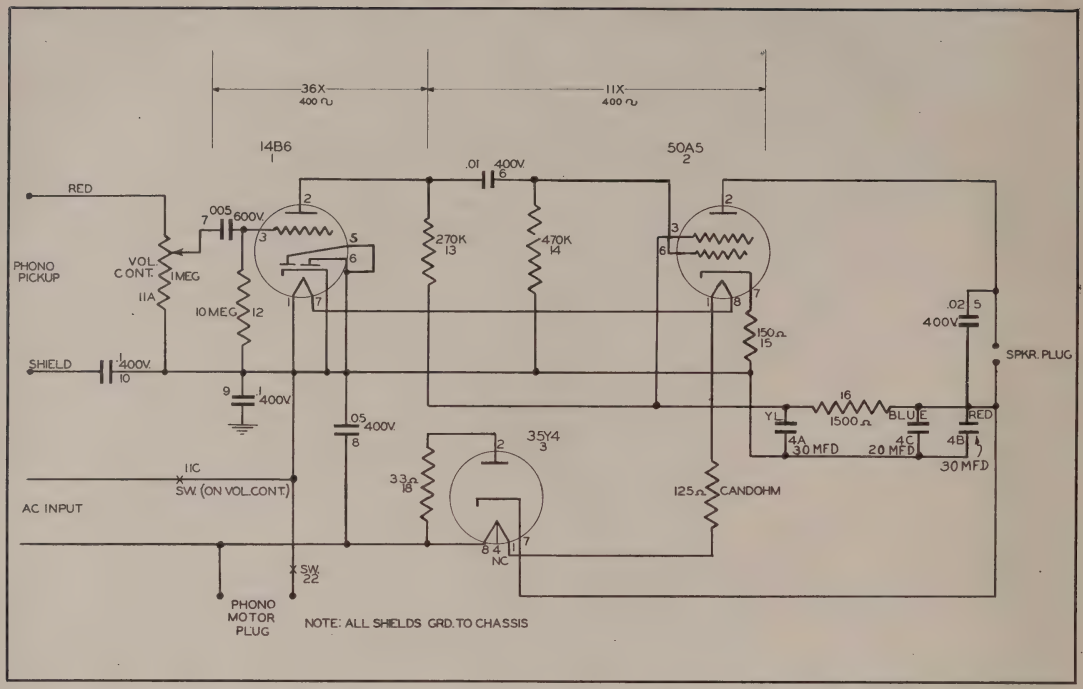
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ALMIRAL PART No.	JENSEN PART No.		
20	FIELD	VC 1.4P.	7pp8-2	SI-1.7		
	PM	2.9Ω				
21	CONE DIA. 4-13/16"	VC DIA. 3/8"	NOT RE-BUILT REPLACE-USE COMPLETE SPEAKER UNIT.			

CHASSIS—BOTTOM VIEW

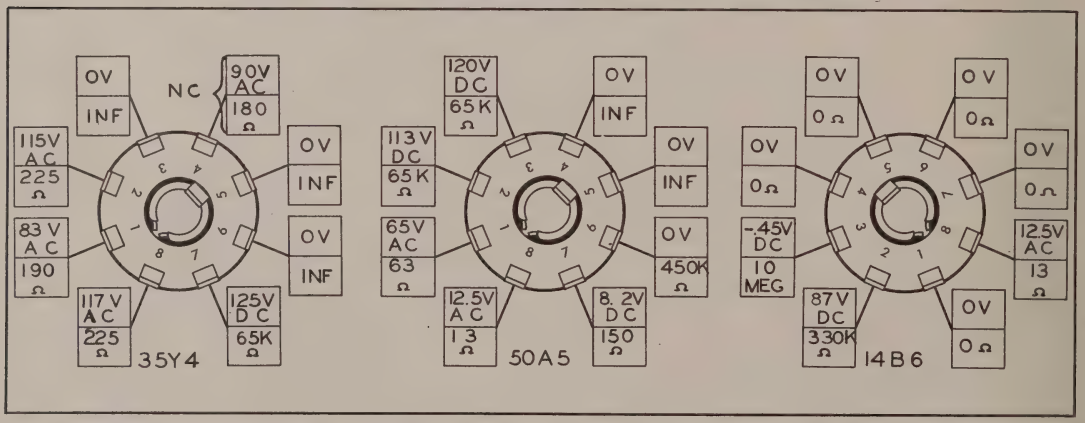


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for average operative stages, rather than absolute values. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3 volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1. DC voltage measurements are at 20,000 ohms per volt; AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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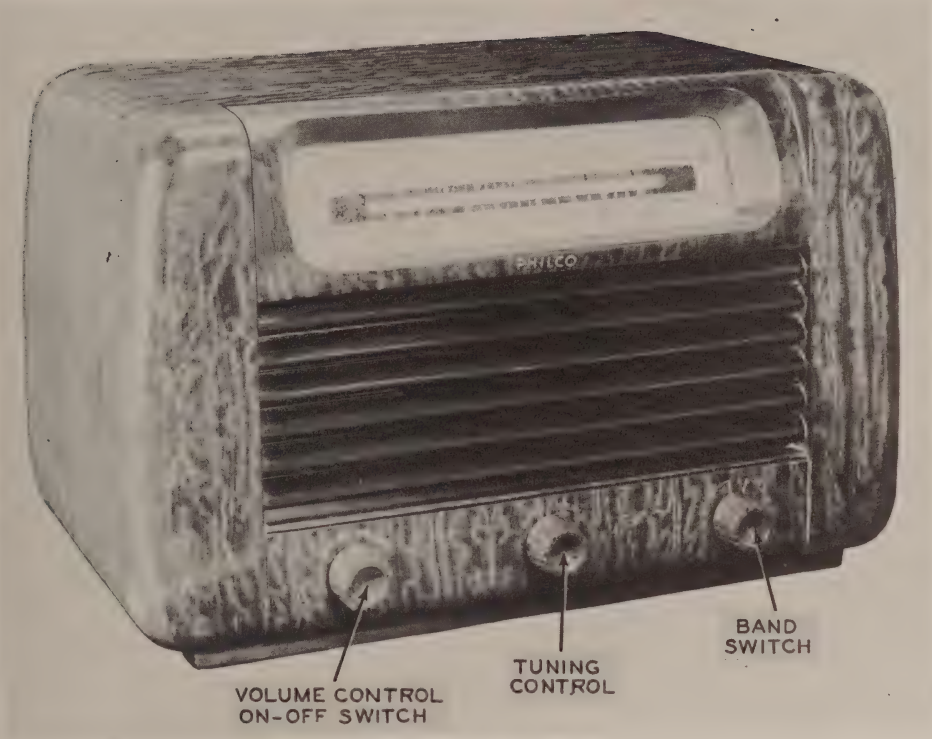


PHILCO MODEL 46-427

TRADE NAME	Philco Model 46-427
MANUFACTURER	Philco Corp., Tioga & C Streets, Philadelphia, Pa.
TYPE SET	AC - DC 2 Band Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types 14AF7 Converter, 7B7 1st IF Amp., 7B7 2nd IF Amp., 7C6 2nd Det.-AVC-1st Audio, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	115 Volts AC-DC Rating .245 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1720KC SHORT WAVE 9.0-15.5MC

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.05 MFD	High side to ant. stator section of tuning gang. Low side to B-.	455KC	BC	Low freq.end of dial.	Across voice coil Left and center lugs on terminal strip at rear of chassis.	A1,A2 A3,A4	Adjust for maximum output. Preset A4 by turning it down tight. Then adjust in order including A4. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and receiver B-. Also decrease dummy to .00i MFD to prevent excessive hum modulation.
"	High side to ant. connection (right hand lug) on terminal strip at rear of chassis. Low side to B-.	1700KC	"	1700KC	"	A5	Preset A7 by turning it down tight and backing off 1/3 turn. Adjust A5 for maximum output. Use isolating instructions given for IF's.
"	"	1500KC	"	Tune to 1500 KC signal.	"	A6	Adjust for maximum output. Use isolation instructions.
"	"	600KC	"	Tune in 600 KC signal.	"	A7	Adjust for maximum output. Rock dial. Use isolation instructions.
							Repeat adjustments on A5 and A6 in order and at frequencies given.
"	"	15MC	SW	15MC	"	A8,A9	Adjust for maximum output. Use isolation instructions

Volume control at maximum and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	14AF7/XXD	14AF7/XXD	8AC	
2	1st IF Amp.	7B7	7B7	8V	
3	2nd IF Amp.	7B7	7B7	8V	
4	Det.-AVC-AF	7C6	7C6	8W	
5	Output	50L6GT	50L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7(A)	20	150	30-2541	2N509	DHN-2x20-150	TA-220	PRS150-20-20	BRD2215	Filter - Red
(B)	20	150							" - Orange
8	.04	400	30-4119	TP425	S-6-04	TC-14	484-.04	DT4S4	Line Filter
9	.04	400	30-4119	TP425	S-6-04	TC-14	484-.04	DT4S4	RF Bypass Rect.
10	.02	400	30-4599	TP423	S-4-02	TC-12	484-.02	DT4S2	50L6 Plate Bypass
11	.01	400	61-0120	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
12	.01	400	61-0120	TP421	S-4-01	TC-11	484-.01	DT4S1	" "
13	.05	200	30-4518	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
14(A)	.02	400	76-1161	TP423	S-4-02	TC-12	484-.02	DT4S2	Line Isolating Trap
(B)	.15	400		TP417	S-4-1	TC-1	484-.15	DT4P1	" " " *
15	.05	200	30-4518	TP426	S-4-05	TC-15	484-.05	DT4S5	Screen Bypass
16	.006	400	30-4504	TP409	S-6-006	TC-26	484-.006	DT6D6	Line Isolating
17	.01	400	61-0120	TP421	S-4-01	TC-11	484-.01	DT4S1	Plate Decoupling
18	.05	200	30-4518	TP426	S-4-05	TC-15	484-.05	DT4S5	Osc. Coupling
19	.05	400		TP426	S-4-05	TC-15	484-.05	DT4S5	Line Isolating Trap*
20	250	500	6010245407	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	50L6 Cath. Bypass
21	250	500	6010245407	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Osc. Feedback
22	50	500	6000515307	MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Grid Cond.
23	250	500	6010245407	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	RF Coupling
24	6	500	6090505007	MC205	M0.5-55	MS-55	1468-.000005	5W5V5	Osc. Coupling S.W.
25	275	500	30-1220-7						Fixed Pad
26	275	500	30-1220-7						" " †

*Used in Later Models
†May be 300 MMF in Some Models

CONTROLS

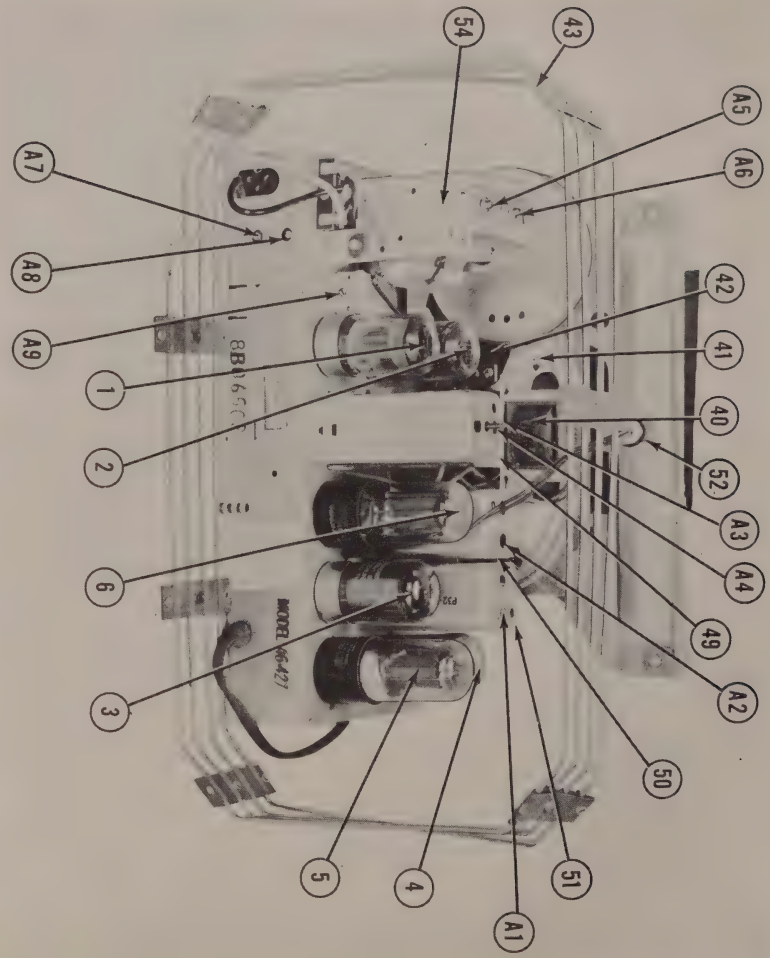
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
27(A)	500KΩ	1	33-5458	MR48	D13-133	M-60-Z	Volume Control
(B)	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 27A per instructions
(C)	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES
28	47KΩ	½	63-3473340	BTS-47K	Yl.-Vl.-Or. Osc. Grid
29	2200Ω	1	66-2223340	BTA-2200	Red-Red-Red Converter Cathodes
30	2.2 Meg.	½	66-5223340	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
31	10KΩ	½	66-3103340	BTS-10K	Br.-Blk.-Or. Osc. Plate Load
32	10KΩ	½	66-3103340	BTS-10K	Br.-Blk.-Or. Plate Filter
33	15KΩ	1	66-3153340	BTA-15K	Br.-Grn.-Or. Screen Dropping
34	2.2 Meg.	½	66-5223340	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
35	4.7 Meg.	½	66-5473340	BTS-4.7 Meg.	Yl.-Vl.-Grn. 1st AF Grid
36	470KΩ	½	63-4473340	BTS-470K	Yl.-Vl.-Yl. 1st AF Plate Load
37	470KΩ	½	66-4473340	BTS-470K	Yl.-Vl.-Yl. Output Grid
38	130Ω	½	66-1133340	BW-½-130	Br.-Or.-Br. Output Cathode
39	120KΩ	½		BTS-120K	Br.-Red-Yl. Line Isolating ‡

‡Not Used in all Models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
40	2250Ω	2.6Ω	192Ω	.56Ω	Part of 36-1533	A-3876	T-13S42#		#bend one mounting tab under and solder to the original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			PHILCO PART No.	JENSEN PART No.		
41	FIELD 500Ω	VC IMP. 2.5Ω	36-1533	NONE		
42	CONE DIA. 4"x6"	VC DIA. 2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	PHILCO PART No.	MEISSNER PART No.	
43	Loop Ant.Coil	0Ω		76-1279		
44	SC Ant.Coil	.1Ω	1.4Ω	32-4008		
45	SW Ant.Coil	0Ω		32-3716		
46	SC Osc.Coil	8Ω		32-3991		
47	SW Osc.Coil	0Ω				Part of 32-3991
48	Grid Coupl. Coil	.8Ω				" " "
49	Input IF	.9Ω	21Ω	32-3956		
50	InterstageIF	9Ω	22Ω	32-3957		
51	Output IF	52Ω	See installation notes	32-3958		From diode to white lead 40.5KΩ - to blk. lead 650KΩ

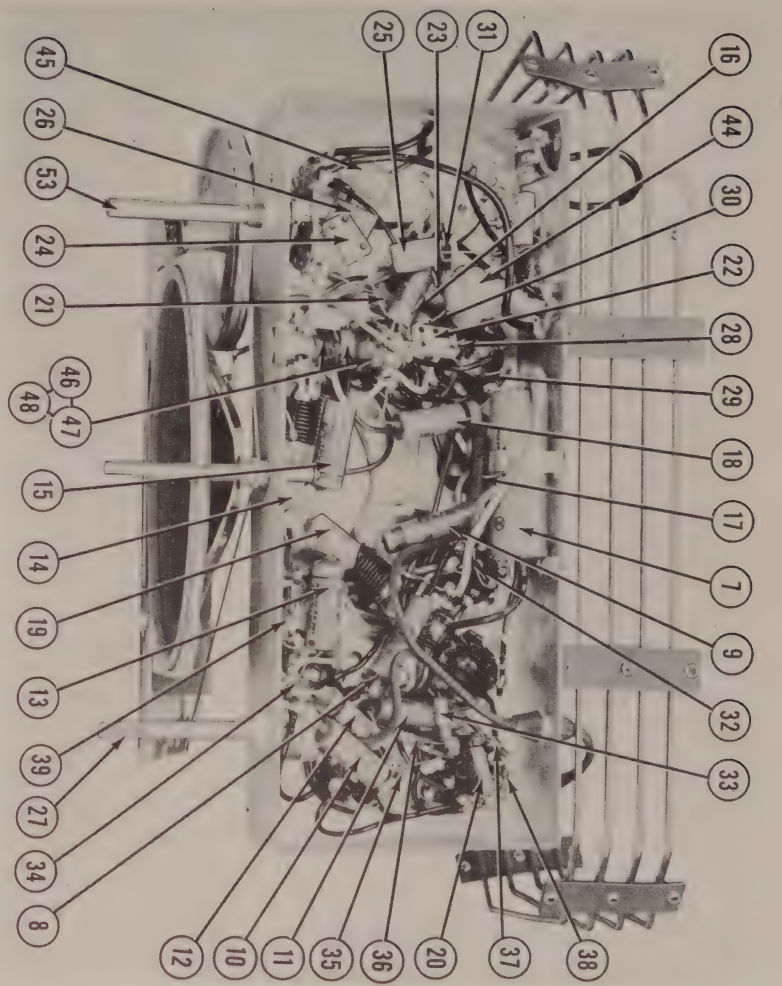
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					PHILCO PART No.		
52	Bayonet	6-8	0.15	Brown	34-2055		#47

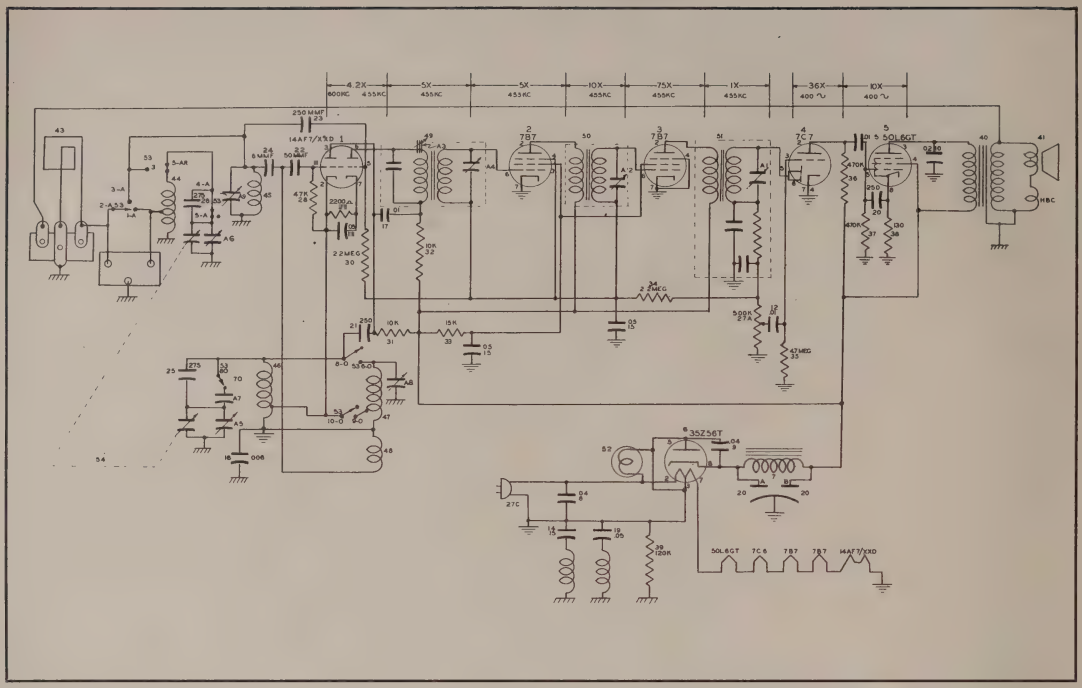
MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
53	Band Switch	42-1772	
54	Tuning Cap.	31-2555	2 Gang Variable Capacitor
A7	Trimmer	31-6453	Broadcast Osc.
A8	"		Short Wave Osc. (Part of 31-6453)
A9	"	31-6428	" " Ant.
	Dial	27-5895	Scale
	Knob Assembly	54-4311	Volume, Tuning & Band Switch
	Cabinet	10650	Walnut-Plastic Covered Wood

CHASSIS—BOTTOM VIEW

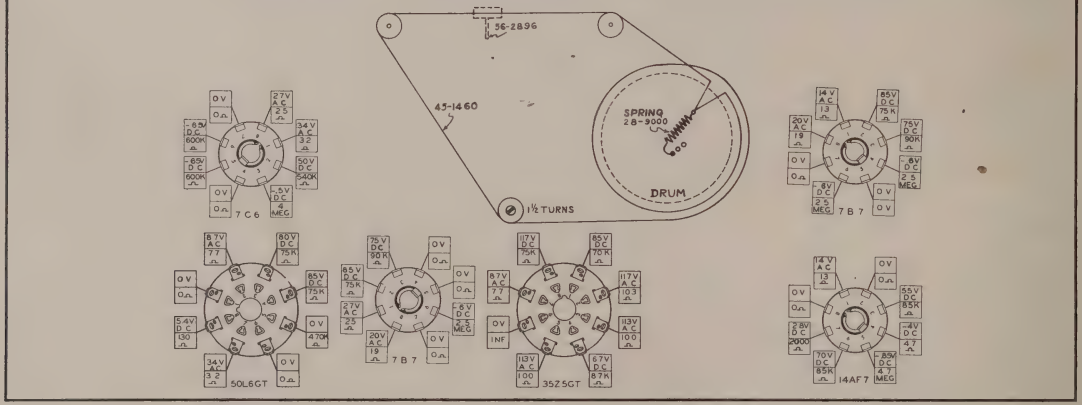


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for average operative stages, rather than absolute values. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3 volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1. DC voltage measurements are at 20,000 ohms per volt; AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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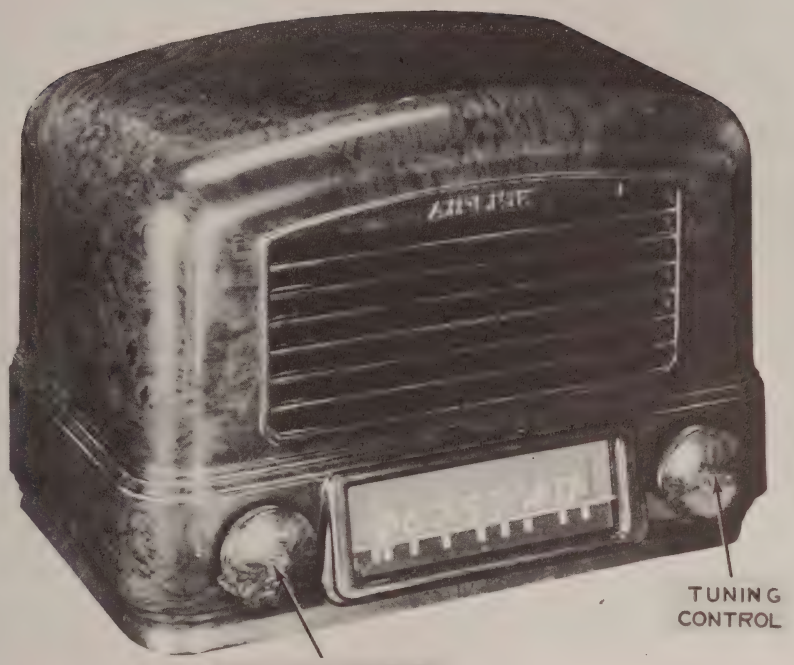
AIRLINE
MODELS 54 BR-1501 A, 1502 A



AIRLINE
MODELS 54 BR-1501 A, 1502 A

AIRLINE MODEL 54BR-1501A

TRADE NAME	Airline, Models 54BR-1501A, 1502A
MANUFACTURER	Montgomery Ward and Co., 619 Chicago Ave., Chicago 7, Illinois
TYPE SET	AC - DC Superheterodyne
TUBES (FIVE)	Types 12SA7 Converter, 12SK7 IF Amplifier, 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC-DC Rating .250 Amps. @ 117 Volts AC
TUNING RANGE—BROADCAST	540 to 1720KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to metal ant. plate. Low side to B-.	455KC	High freq. end of dial. Iron cores all the way out.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and receiver B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
"	"	1720KC	"	"	A5	"
200 MMFD	High side to ext. ant. clip. Low side to B-.	"	"	"	A6	Adjust for maximum output.
"	"	1400KC	1400KC	"		Adjust position of antenna coil for maximum output.
"	"	1720KC	1720KC	"	A6	Adjust for maximum output. If appreciable adjustment is necessary the position of the antenna coil at 1400KC must be readjusted. Continue adjustments until no adjustment is needed on A6 at 1720KC.

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6(A)	40	150	BE11992	FP354†	DY-60+40-150	EL-24	AF88D	UP4CJ1†	■ Filter
6(B)	20	150							▲ "
6(A)	40	150	BE11993	FP214	DY-2x50-150	EL-25	AF1010D	UP6BJ34	Filter *
6(B)	60	150							"
7	.05	400	BE10013	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Bypass
8	.15	400	BE10091	TP417	S-4-2	TC-2	484-.15	DT4P2	Line Isolating Trap
9	.02	400	BE10026	TP423	S-4-02	TC-12	484-.02	DT4S2	50L6GT Plate Bypass
10	.01	400	BE10011	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
11	.002	600	BE10025	TP405	S-6-002	TC-22	684-.002	DT6D2	" "
12	.05	200	BE1009	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
13	500	500	BE1292	MC245	M0.5-35	1FM-35	1468-.0005	5W5T5	Audio Plate Bypass
14	250	500	BE12912	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	RF Bypass Vol. Cont.
15	50	500	BE12939	MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Grid Cond.
16	300	600	BE129114	MC241	M0.5-33	MS-33	1468-.0003	5W5T3	Antenna Coupling

*For Use In 25 Cycle Models
†Parallel Two Sections

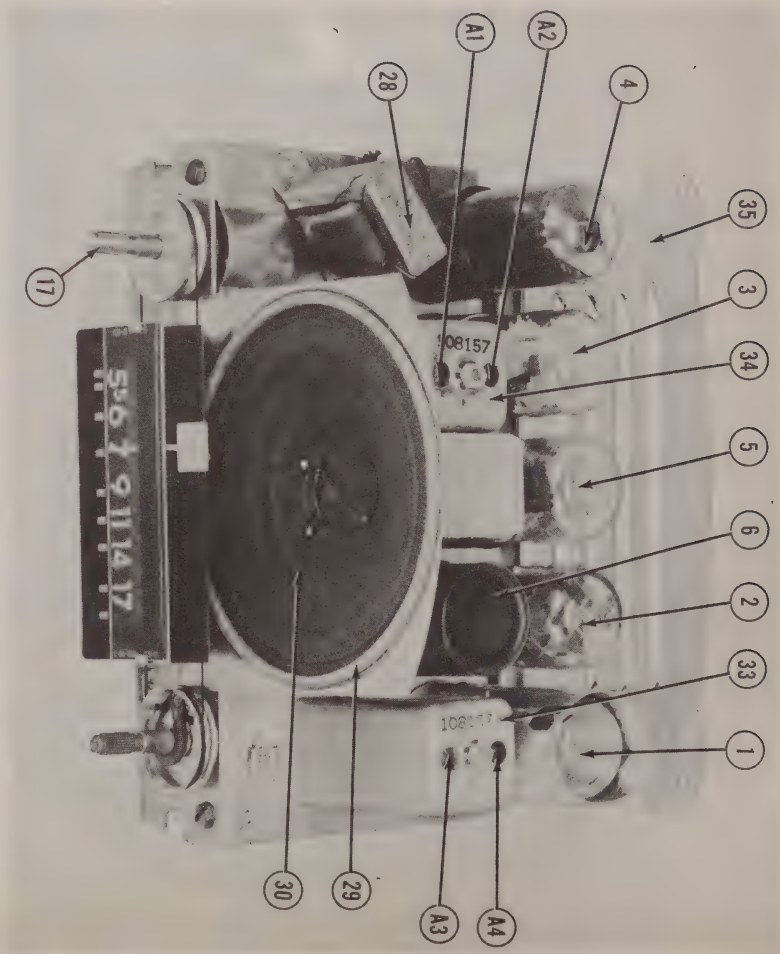
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17(A)	500KΩ	1	BE101255	MK401	D13-133	AM-60-2	Volume Control
(B)	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 17A per instructions.
(C)	Switch		" "	M23	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
18	22KΩ	½	BEA-9B1-78	BTS-22K	Red-Red-Or. Osc. Grid
19	3.3 Meg.	½	BEA-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
20	4.7 Meg.	½	BEA-9B1-35	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
21	150KΩ	½	BEA-9B1-26	BTS-150K	Br.-Grn.-Yl. 1st AF Plate Load
22	220KΩ	½	BEA-9B1-27	BTS-220K	Red-Red-Yl. Output Grid
23	150Ω	½	BW-½-150		Br.-Grn.-Br. Output Cathode
24	150KΩ	½	BEA-9B1-26	BTS-150K	Br.-Grn.-Yl. Line Isolating
25	1200Ω	1	BEA-9B2-63	BTA-1200	Br.-Red-Red Filter
26	33Ω	1	BEA-9B2-4	Bw-1-33	Or.-Or.-Blk. Line Dropping
27	27Ω	½	BEA-9B1-43	BW-½-27	Red-Vi.-Blk. Rectifier Ballast

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
28	4000Ω	3.2Ω	270Ω	.66Ω	105128	A-3856†	T-13S391		†Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRLINE PART No.	JENSEN PART No.		
29	FIELD	VC IMP.				
	PM	3.2Ω	18A10251			
30	CONE DIA.	Vc DIA.				
	3-15/16"	"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

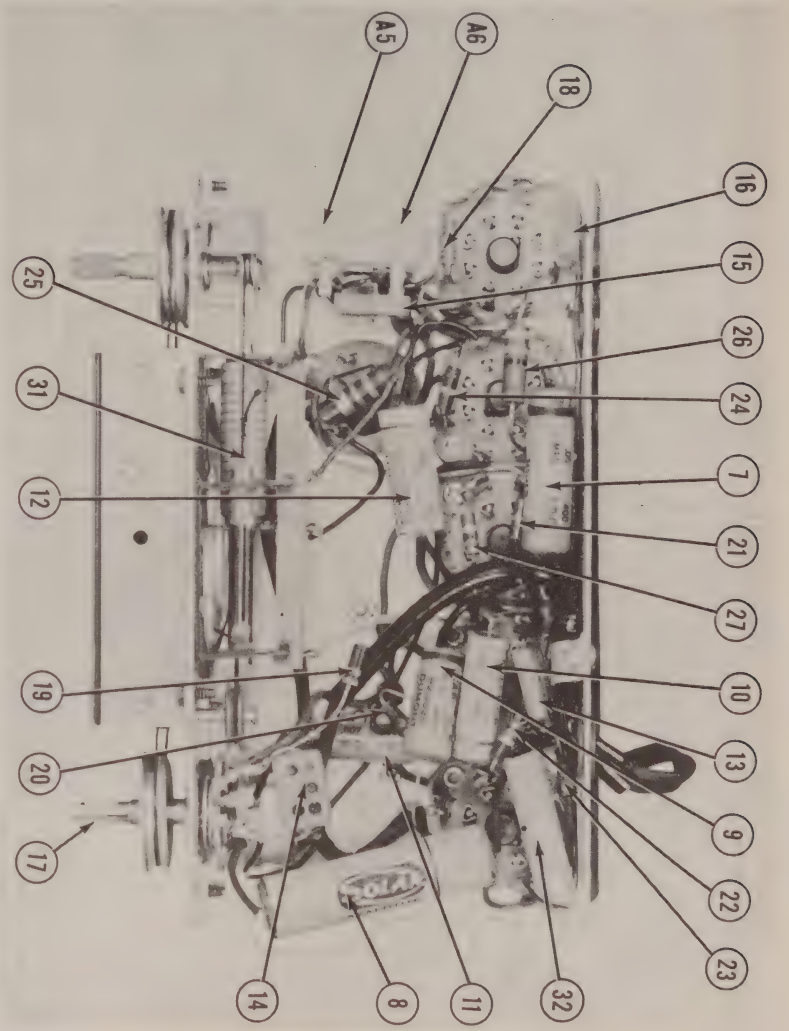
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	AIRLINE PART No.	MEISSNER PART No.	
31	Tuning Assy			BE13814		Ant.-Osc. Coils Slug Tuned-Ganged
32	RF Choke Coil	0Ω		BE136128		
33	Input IF	40.5Ω	40Ω	BE136167H		
34	Output IF	40Ω	40.75Ω	BE136167I		

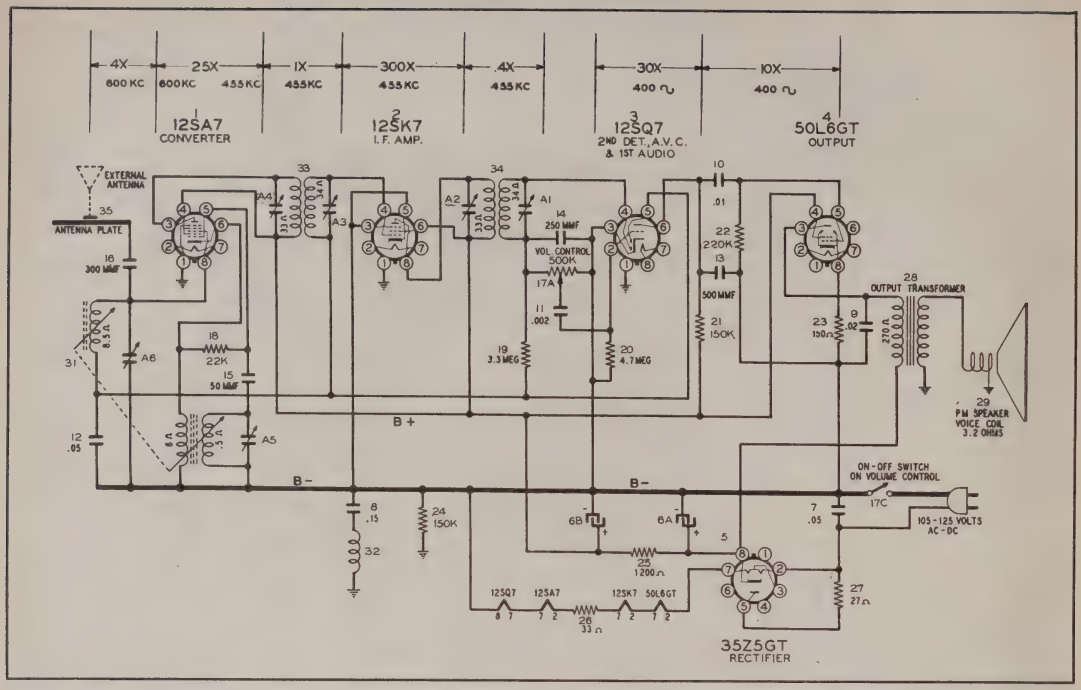
MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
	Dial Scale	BEA-6D-10049-1	For Ivory Cabinet
	" "	BEA-6D-10049-2	For Walnut Cabinet
	Knob	BE-128660-9	"Volume" Ivory
	"	BE-128660-46	" Walnut
	"	BE-128661-9	"Tuning" Ivory
	"	BE-128661-46	" Walnut
	Antenna Plate	BE-115597C	For Ivory Cabinet
	" "	BE-115597	For Walnut Cabinet
	Cabinet	BE-128652-9	Bakelite-Ivory
	"	BE-128652-46	" Walnut

CHASSIS—BOTTOM VIEW



SCHEMATIC DIAGRAM



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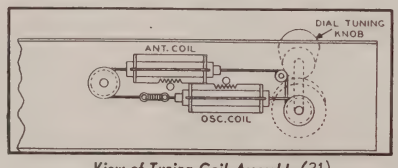
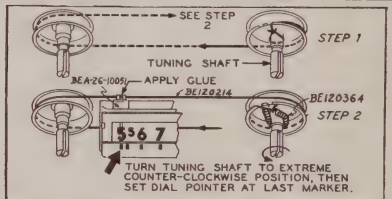
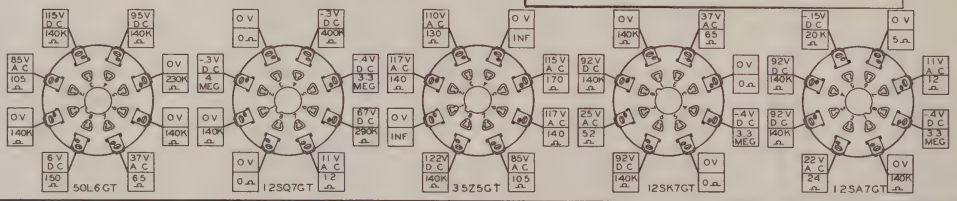
VOLTAGE AND RESISTANCE ANALYSIS CHART



View of Tuning Coil Assembly (31)





1. DC voltage measurements are at 20,000 ohms per volt; AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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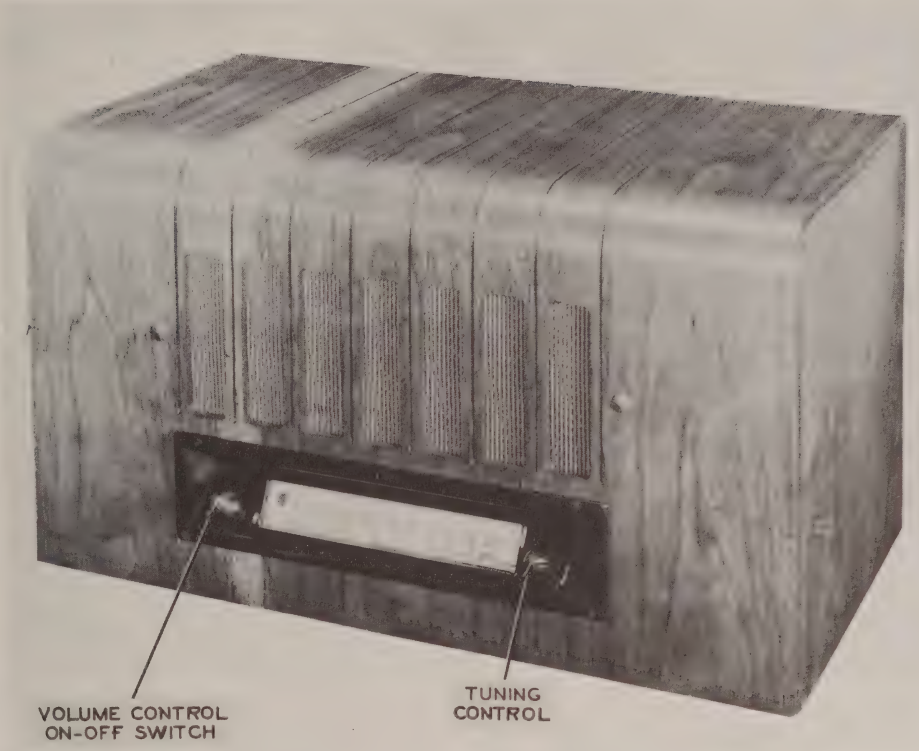
BELMONT
MODEL 4 B 17



BELMONT
MODEL 4 B 17

BELMONT MODEL 4B17

TRADE NAME	Belmont Model 4B17
MANUFACTURER	Belmont Radio Corporation, 5921 West Dickens Ave., Chicago 39, Illinois
TYPE SET	Battery Operated Superheterodyne
TUBES (FOUR)	Types 1A7GT Converter, 1N5GT IF Amplifier, 1H5GT Det.-AVC-AF, 3Q5GT Power Output
POWER SUPPLY	Battery 1½ Volts "A" 90 Volts "B" Ratings .250 Amps. @ 1.5 Volts, .0137 Amps. @ 90 Volts
TUNING RANGE—BROADCAST	535-1720KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to grid (top cap) of 1A7GT. Low side to chassis.	455KC	High freq. end of dial. Iron cores all the way out.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
"	"	1720KC	"	"	A5	" " " "
200 MMFD	High side to ant. lead. Low side to chassis.	"	"	"	A6	" " " "
"	"	1400KC	1400KC	"		Adjust position of antenna coil for maximum output. Repeat this adjustment and adjust A6 for maximum results.

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		BELMONT PART No.	STANDARD REPLACEMENT		
1	Converter	1A5GT	1A5GT	6X	
2	IF Amp.	1N5GT	1N5GT	5Y	
3	Det.-AVC-AF	1H5GT	1H5GT	6Z	
4	Power Output	3Q5GT	3Q5GT	7AP	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
5(A)	10	150	119117	TC42	M-10-150	UT-121	PRS150-12	BR1215	RF Bypass Pwr. Supp.
(B)	.5	200	C-8D-11270	TP431	S-4-5	TC-5	484-.5	DT4P5	" " " " *
6	.002	600	C-8D-10784	TP405	S-6-002	TC-22	684-.002	DT6D2	3Q5 Plate Bypass
7	.5	120	10017	TP431	S-4-5	TC-5	484-.5	DT4P5	Filament Bypass
8	.02	400	C-8D-10774	TP423	S-4-02	TC-12	484-.02	DT4S2	Audio Coupling
9	.003	600	C-8D-10786	TP406	S-6-003	TC-23	684-.003	DT6D3	" "
10	.25	200	C-8D-10775	TP430	S-4-25	TC-2	484-.25	DT4P25	RF Bypass Plate Supp.
11	.05	200	C-8D-10770	TP426	S-4-05	TC-15	484-.05	DT4S5	IF Screen Bypass
12	.05	200	C-8D-10770	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
13	.05	200	C-8D-10770	TP426	S-4-05	TC-15	484-.05	DT4S5	1A7 Screen Bypass
14	.001	600	C-8D-10929	TP404	S-6-001	TC-21	684-.001	DT6D1	AVC Filter
15	100	500	C-8F3-113	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	Audio Plate Bypass
16	100	500	C-8F3-113	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Diode
17(A)	220	500	C-8F3-10	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Osc. Grid Cond.
(B)	100	500	C-8F3-113	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	" " " *
18(A)	330	500	C-8F3-11	MC241	M0.5-33	1FM-335	1468-.00035	5W5Q3	Ant. Coupling
(B)	100	500	C-8F3-113	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	" " *

*Used in Later Models.

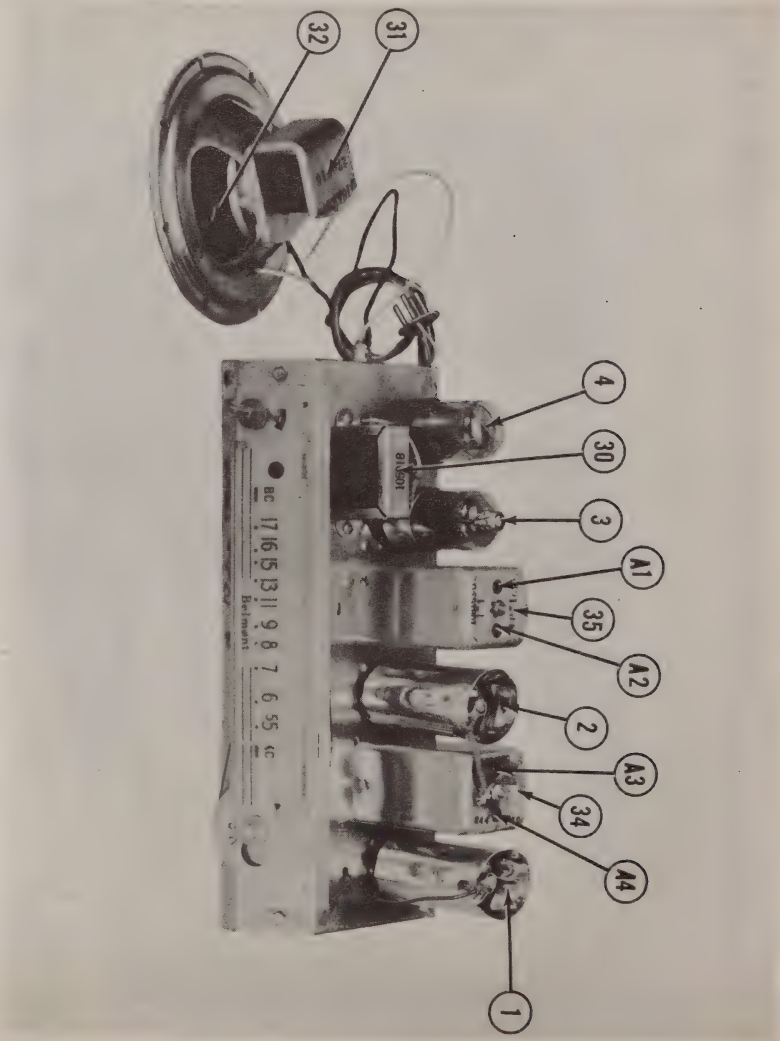
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	BELMONT PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
19(A)	1 Meg.	1	A-10155	MK402	D13-137	AM-63-2	Volume Control
(B)	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 19A per instructions.
(C)	Switch		" "	M27	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	BELMONT PART No.	IRC PART No.	
20	10KΩ	½	C-9B1-19	BTS-10K	Br.-Blk.-Or. Ant. Loading
21	3.3 Meg.	½	C-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
22	3.3 Meg.	½	C-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. " "
23	33KΩ	½	C-9B1-80	BTS-33K	Or.-Or.-Or. Converter Screen Dropping
24	220KΩ	½	C-9B1-27	BTS-220K	Red-Red-Yl. Osc. Grid
25	56KΩ	½	C-9B1-83	BTS-56K	Grn.-Blue-Or. IF Screen Dropping
26	4.7 Meg.	½	C-9B1-35	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
27	1 Meg.	½	C-9B1-31	BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Plate Load
28	1.5 Meg.	½	C-9B1-32	BTS-1.5 Meg.	Br.-Grn.-Grn. Output Grid
29	390Ω	½	C-9B1-57	BW-½-390	Or.-White-Br. Fixed Bias

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BELMONT PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
30	17500Ω	3.5Ω	475Ω	.52Ω	10591B	A-3861	T-13843		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			BELMONT PART No.	JENSEN PART No.		
31	FIELD	VC IMP.	18A-10164	ST-106		
	PM	3.5Ω				
32	CONE DIA.	VC DIA.	NOT READILY	REPLACEABLE-USE COMPLETE SPEAKER UNIT		
	4-13/15"	9/16"				

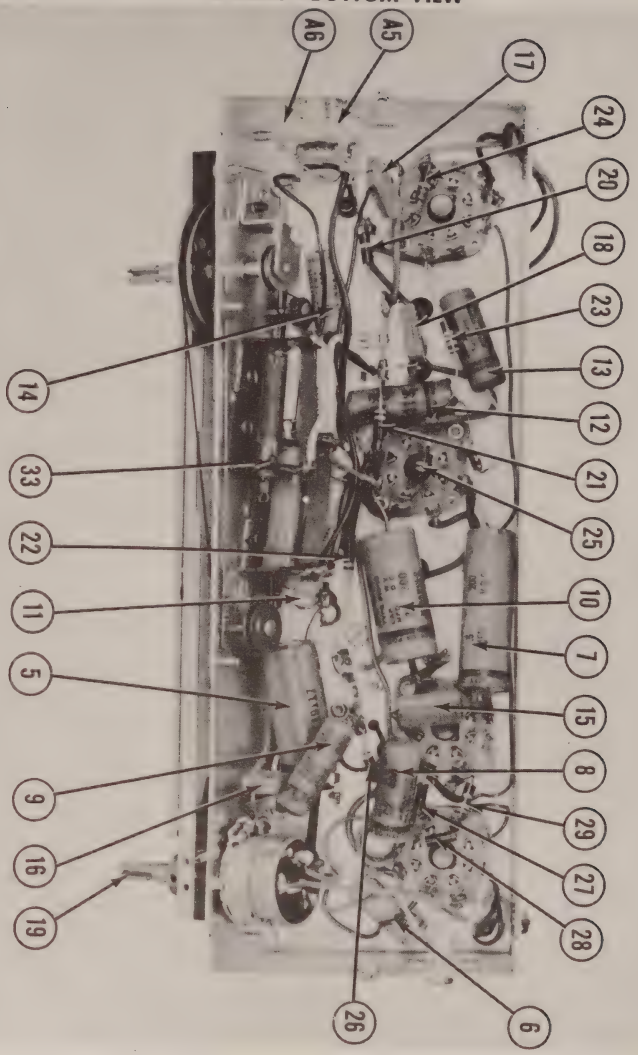
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	BELMONT PART No.	MEISSNER PART No.	
33	Tuning Assy.			C-211-10171		Includes Ant. and Osc. Coils
34	Input IF	22.5Ω	28.5Ω	108202C	16-3658	Drill new mounting holes
35	Output IF	30.4Ω	30Ω	108153D	16-6660	" " " "

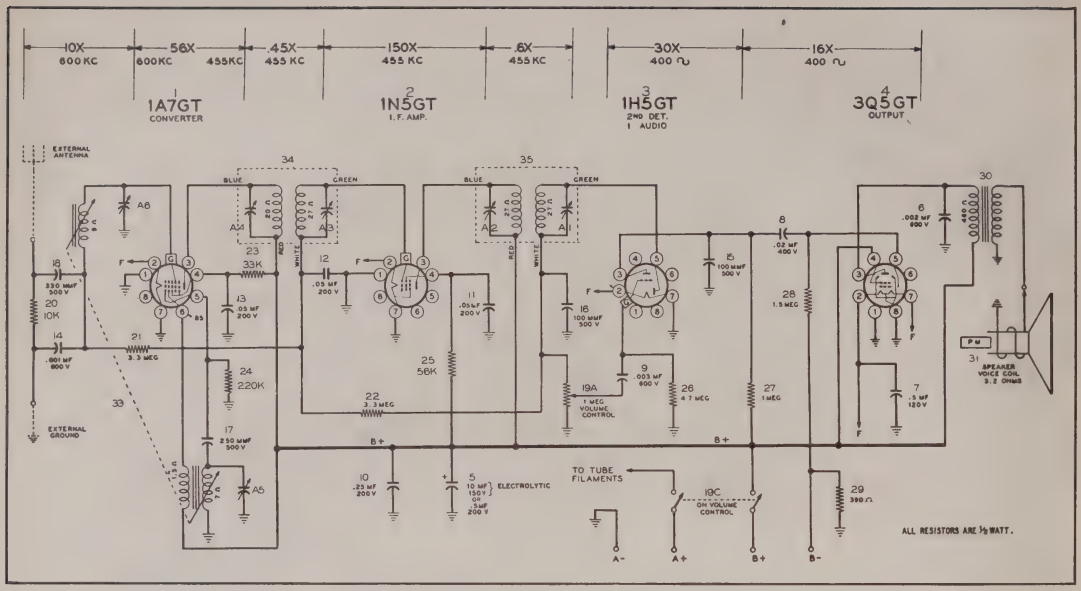
MISCELLANEOUS

ITEM No.	PART NAME	BELMONT PART No.	NOTES
	Connector	A-55A-7386-1	Speaker Plug
	Plug	10724	Speaker Leads
	Cable	B-14A-10152	Battery Cable Assembly
	Pointer	A-2G-10162	Dial
	Knob	A-5B-10170-1	Volume Control and Tuning
	Scale	B-6D-10618	Dial
	Crystal	A-6D-10163	"
	Indicator	A-2F-10135	On-Off

CHASSIS—BOTTOM VIEW

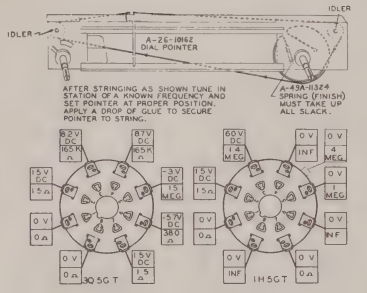


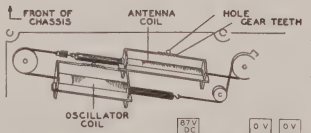
SCHEMATIC DIAGRAM



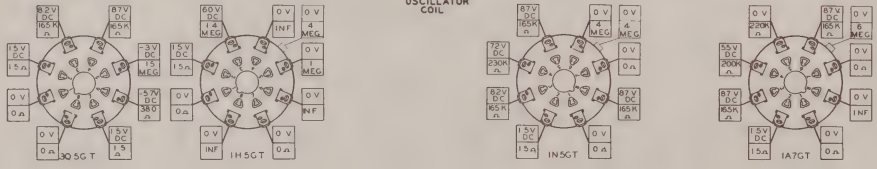
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting to ground the junction point of the two 3.3 Meg. resistors.

VOLTAGE AND RESISTANCE ANALYSIS CHART


IDLER
A-25-10162
DIAL POINTER
AFTER STRINGING AS SHOWN TUNE IN STATION OF A KNOWN FREQUENCY AND SET POINTER AT PROPER POSITION. APPLY A DROP OF GLUE TO SECURE POINTER TO STRING.
A-49A-11324
SPRING (FINISH) MUST TAKE UP ALL SLACK.



The antenna coil assembly is movable left or right. When making the adjustment as required in the alignment procedure, move the coil assembly very slowly, either by hand or by pivoting one edge of a screwdriver blade in the hole and engaging the blade in the gear teeth of the coil form.



1 - DC Voltage measurements are at 20,000 ohms per volt.

2 - Socket connections are shown as bottom views.

3 - Measured values are from socket pin to common negative.

4 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.

5 - Volume control at maximum, no signal applied for voltage measurements.

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BENDIX
MODEL 646 A

BENDIX
MODEL 646 A

BENDIX MODEL 646A

TRADE NAME	Bendix, Model 646A
MANUFACTURER	Bendix Radio Division, Bendix Aviation, Baltimore 4, Md.
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types 14A7 RF Amp., 14Q7 Converter, 14A7 IF Amp., 14B3 Det.-AVC-AF, 35A5 Power Output, 35Y4 Rectifier.
POWER SUPPLY	105-125 Volts AC-DC Rating .300 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1725KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to pin #6 (signal grid) of 14Q7. Low side to B-.	455KC	High freq. end of dial. Rotor full open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and receiver B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
50 MMFD	High side to ext. ant. connection. Low side to B-.	1550KC	6-21/32" from left end of dial back-plate.	"	A5	Adjust for maximum output. Use isolation transformer or isolating capacitor.
"	"	"	"	"	A6,A7	"
"	"	965KC	4-29/32" from left end of dial back-plate.	"		Check sensitivity and calibration.
"	"	580KC	2-23/32" from left end of dial back-plate.	"		Check sensitivity and calibration. If incorrect readjust A6 and A7 at 1550KC

Adjust dial pointer by turning tuning control fully counterclockwise and adjusting dial pointer until it is exactly 2-3/32" from left hand end of dial back plate. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	14A7	14A7	8V	Lock-in
2	Converter	14Q7	14Q7	8AL	"
3	IF Amp.	14A7	14A7	8V	"
4	Det.-AVC-AF	14B6	14B6	8W	"
5	Power Output	35A5	35A5	6AA	"
6	Rectifier	35Y4	35Y4	5AL	"

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BENDIX PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7(A)	40	150	CE3A00	FP357	DY-60+40+20-150	EL-24	AF88D	UP6CJ44	▲ Filter
(B)	20	150					PRS150-20		"
(C)	60	150		TC45*		UT-501			■ "
8	.05	400	CP4T40	TP426	S-4-05	TC-15	484-.05	DT4S5	RF Bypass Rect.
9	.1	400	CP4T51	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolating
10	.02	400	CP4T34	TP423	S-4-02	TC-12	484-.02	DT4S2	35A5 Plate Bypass
11	.05	400	CP4T40	TP426	S-4-05	TC-15	484-.05	DT4S5	Audio Coupling
12	.006	400	CP4T20	TP409	S-6-006	TC-26	484-.006	DT6D6	" "
13	.02	400	CP4T34	TP423	S-4-02	TC-12	484-.02	DT4S2	Tone Comp. Feedback
14	.006	400	CP4T20	TP409	S-6-006	TC-26	484-.006	DT6D6	RF Bypass Vol. Cont.
15	.05	400	CP4T40	TP426	S-4-05	TC-15	484-.05	DT4S5	Screen Bypass
16	.05	400	CP4T40	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
17	.004	600	CP6T16	TP407	S-6-004	TC-24	684-.004	DT6D4	Ant. Coupling
18	220	500	CM5A30	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass
19	47	500	CM5A14	MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Grid Cond.
20	47	500	CM5A14	MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	Fixed Tuning, RF Trans.
21	3.31	500	CC9A16						RF Coupling

*Parallel with 40 MFD section of FP357 to obtain 60 MFD.

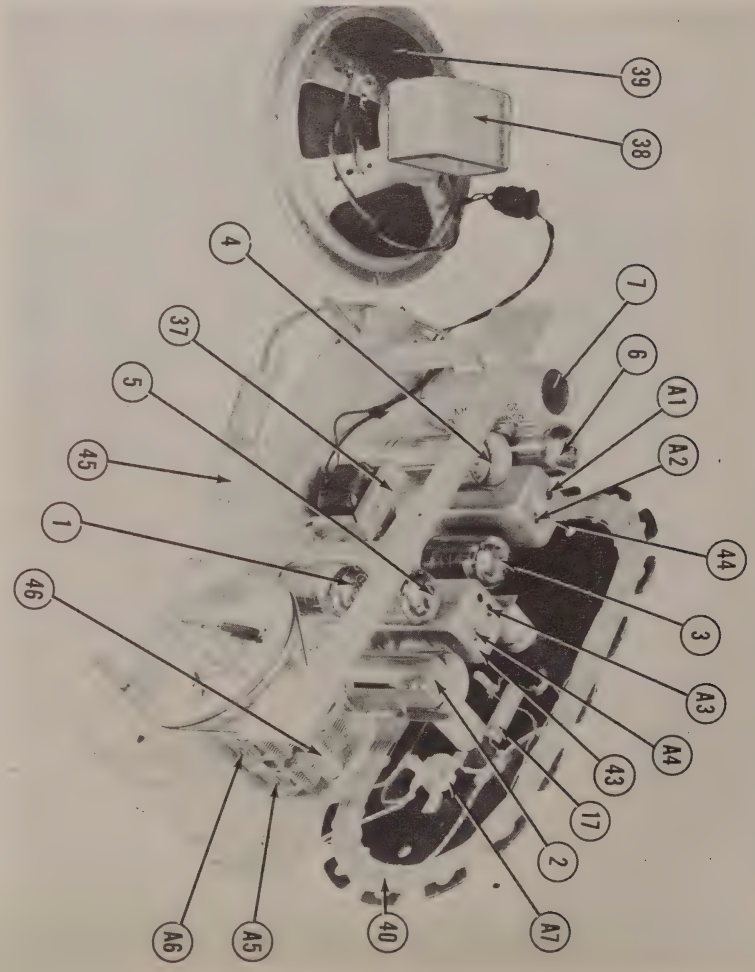
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BENDIX PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22(A)	1 Meg.	1	RV4S02	—	D17-137X	T-101	Volume Control
(B)	Shaft		Not Req.		&	Not Req.	Attach to 22A per instructions.
(C)	Switch		" "		41	SW-A	" " " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BENDIX PART No.	IRC PART No.	IDENTIFICATION CODES
23	220Ω	½	RC1H16	BW-½-220	Red-Red-Br. RF Cathode
24	22KΩ	½	RC1H40	BTS-22K	Red-Red-Or. Osc. Grid
25	470Ω	½	RC1H20	BTS-470	Yl.-Vi.-Br. Plate Filter
26	3.3 Meg.	½	RC1H68	BTS-3.3Meg.	Or.-Or.-Grn. AVC Network
27	470KΩ	½	RC1H58	BTS-470K	Yl.-Vi.-Yl. Diode Load
28	6800Ω	½	RC1H34	BTS-6800	Blue-Gray-Red Tone Compensation
29	220KΩ	½	RC1H54	BTS-220K	Red-Red-Yl. 1st AF Plate Load
30	4.7 Meg.	½	RC1H70	BTS-4.7 Meg	Yl.-Vi.-Grn. 1st AF Grid Load
31	470KΩ	½	RC1H58	BTS-470K	Yl.-Vi.-Yl. Output Grid Load
32	150Ω	1	RW1B14	BW-1-150	Br.-Grn.-Br. " Cathode
33	220KΩ	½	RC1H54	BTS-220K	Red-Red-Yl. Line Isolating
34	33Ω	2	RW2A06	BW-2-33	Or.-Or.-Blk. Ballast
35	4700Ω	½	RC1H32	BTS-4700	Yl.-Vi.-Red Filter
36	2200Ω	2	RC4G28	BW-2-2200	Red-Red-Red "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BENDIX PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
37	23502	3.22	1782	.562	TA0003	A-3876	T-13S42†		†Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			BENDIX PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
38	PM	3.22	SP6R00	ST-110		
	CONE DIA.	VC DIA.				
39	5-7/8"	3/4"	CS6R00 - Code 285 CS6R01 - Code 159 CS6R02 - Code 270 CS6R03 - Code 258 CS6R04 - Code 191 CS6R05 - Code 188 CS6R06 - Code 371	Cone & Voice Coil Assemblies		

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	BENDIX PART No.	MEISSNER PART No.	
40	Loop Ant.	1Ω	.9Ω	AL0C03		
41	RF Coil	67Ω	2.1Ω	TR6L00		
42	Osc. Coil	.5Ω	4Ω	L06B00	14-1040	Fabricate mounting bracket
43	Input IF	29Ω	29Ω	T10C01	16-6658	
44	Output IF	25Ω	25Ω	T10D01	16-6670	

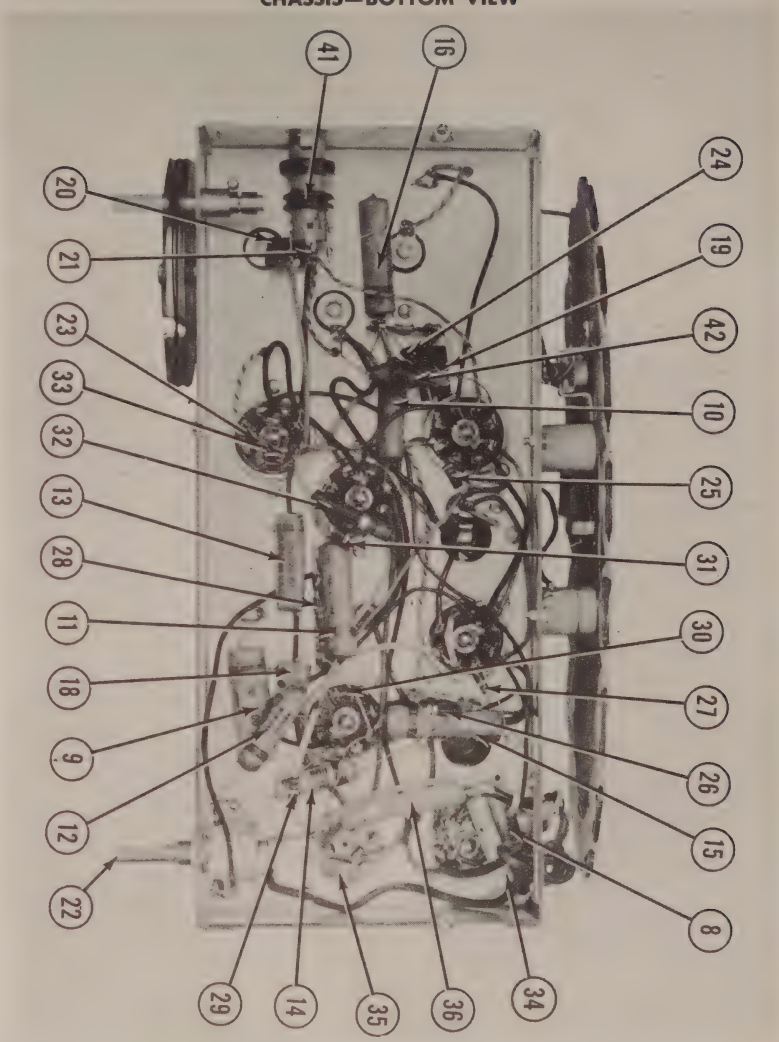
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					BENDIX PART No.		
45	Screw	120V					S-6

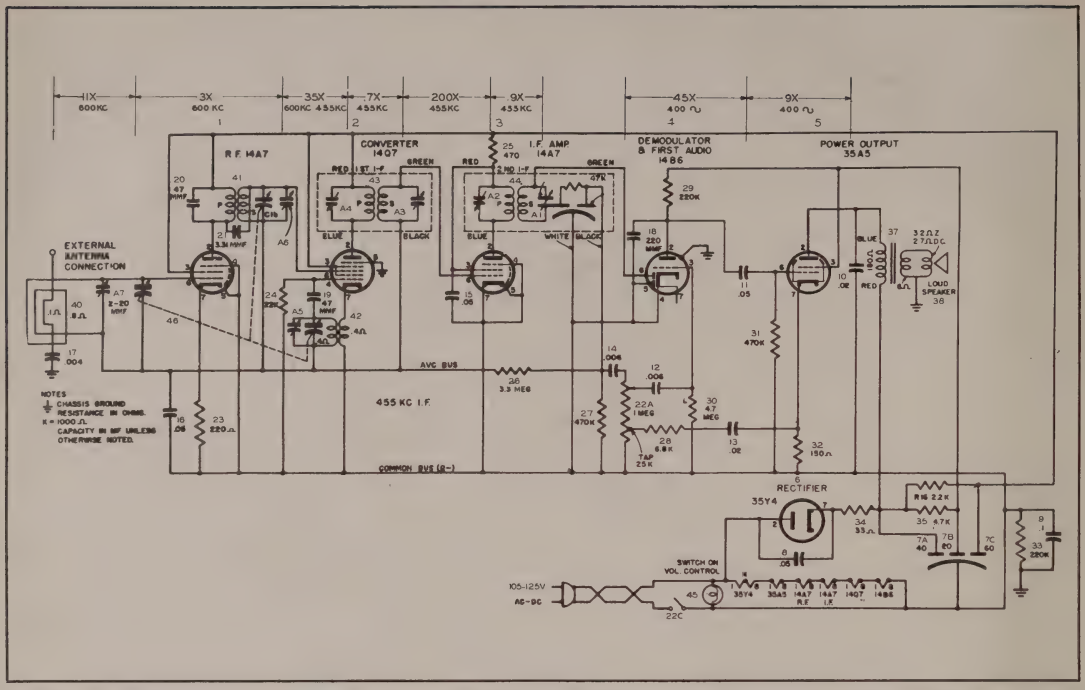
MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
46	Tuning Cap.	CV0C00	3 Gang Variable Cap.
	Glass	DS0A04	Dial
	Knob	KY0M00	Tuning & Volume
	"	KY0M01	2-Dummy
	Ring	HK0R00	Knob Retainer Spring
A7	Trimmer	CT2A01	Antenna Trimmer

CHASSIS—BOTTOM VIEW

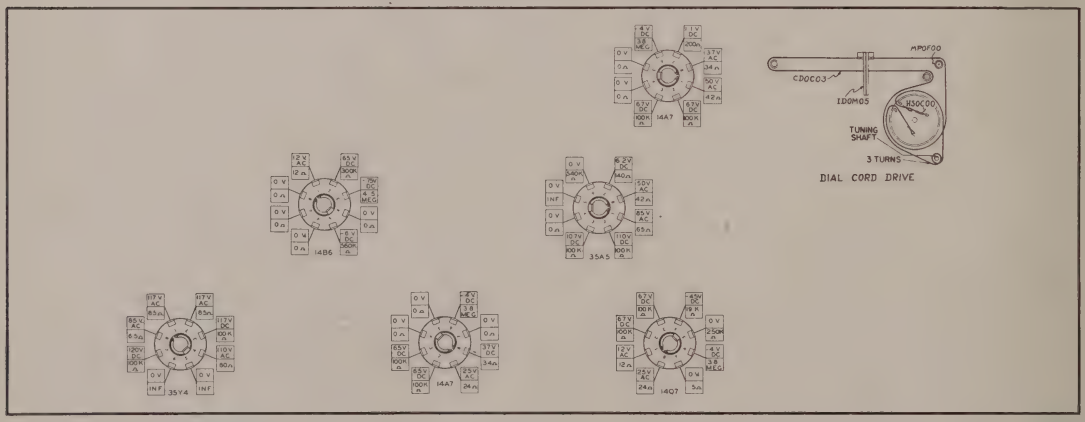


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for average operative stages, rather than absolute values. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3 volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1. DC voltage measurements are at 20,000 ohms per volt; AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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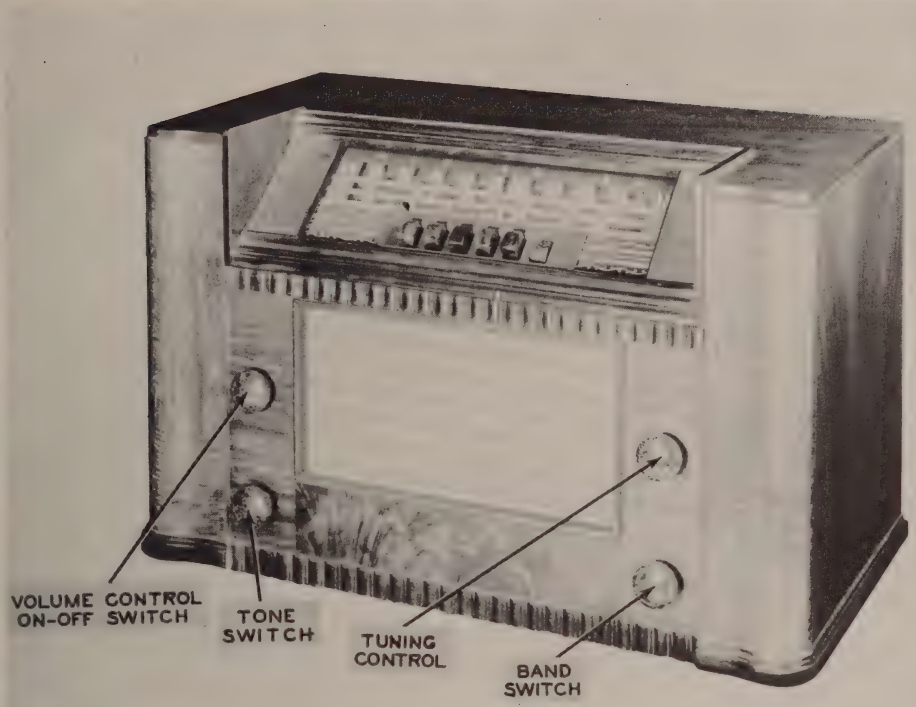
AIRCHIEF
MODEL 4-A-23 (CODE 5-5-9003-A)



AIR CHIEF (FIRESTONE) MODEL 4-A-23

TRADE NAME	Air Chief (Firestone) Model 4-A-23 (Code 5-5-9003-A)
SUPPLIER	The Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, Ohio
TYPE SET	AC 3 Band Superhet. - Self Contained Loop Ant. - 5 Button Automatic Tuning
TUBES (SEVEN)	Types 6SK7 RF Amp., 6SA7 1st Det.-Osc., 6SK7 IF Amp., 6SQ7 2nd Det.-AVC, 6SJ7 1st AF Amp., 6K6GT/G Power Output, 5Y3GT/G Rectifier.
POWER SUPPLY	105-125 Volts AC Rating .485 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1725 KC SHORT WAVE 11.4-15.5MC and 5.9-10MC

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to pin #8 (signal grid) of 6SA7. Low side to chassis.	455KC	BC (counter-clockwise)	Any point of no interfering signal.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output Repeat adjustments.
.003 MFD	High side to ext. ant. clip on loop frame. Low side to chassis.	1500KC	"	1500KC	"	A5	Adjust for maximum output
"	"	"	"	"	"	A6,A7,	" " " "
"	"	600KC	"	Tune to 600 KC signal.	"	A8	Rock dial and adjust for maximum output. Repeat adjustments A5, A6 and A7 at 1500KC then check A8 at 600KC.
400Ω res	"	15MC	SW	15MC	"	A9	Adjust for maximum output Check for proper peak by tuning in image at 14.1MC
"	"	"	"	"	"	A10	Rock dial slightly and adjust for maximum output
"	"	9.5MC	31M (clock-wise)	9.5MC	"	A11	Adjust for maximum output Check for proper peak by tuning in image at 8.6MC
"	"	"	"	"	"	A12	Rock dial slightly and adjust for maximum output.

Adjust dial pointer over last mark to left of "55" with rotors in full mesh. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting. Loop and chassis in same relative position as they will be with chassis in cabinet.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: AIR CHIEF PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amplifier	6SK7	6SK7	6N	
2	1st Det.-Osc.	6SA7	6SA7	6R	
3	IF Amplifier	6SK7	6SK7	6N	
4	2nd Det.-AVC	6SQ7	6SQ7	9G	
5	1st. AF Amp.	6SJ7	6SJ7	6N	
6	Power Output .	6K6GT/G	6K6GT/G	7E	
7	Rectifier	5Y3GT/G	5Y3GT/G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

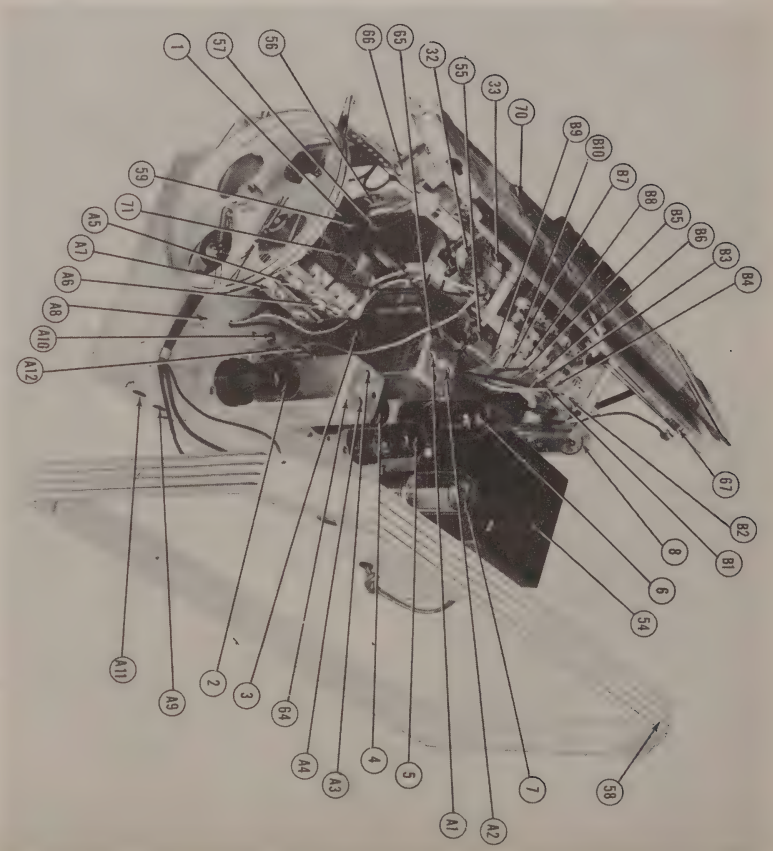
ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR CHIEF PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8(A)	20	400	502207	FP339	DY-2x20-450	EL-312	AF44J	UP6CJ13	■ Filter
(B)	10	400							▲ "
(C)	20	25			M-25-25		PRS25-25		
9	.05	600	502154	TP415	S-6-05	TC-15	684-.05	DT5S5	Tone Compensation
10	.004	600	502150	TP407	S-6-004	TC-24	684-.004	DT6D4	6K6 Plate Bypass
11	.02	400	502152	TP423	S-4-02	TC-12	484-.02	DT4S2	Audio Coupling
12	.1	400	502410	TP428	S-4-1	TC-1	484-.1	DT4P1	Audio Plate Decoup.
13	.25	400	502405	TP430	S-4-25	TC-2	484-.25	DT4P25	Negative Feedback
14	.004	600	502150	TP407	S-6-004	TC-24	684-.004	DT6D4	Audio Coupling
15	.05	400	502157	TP426	S-4-05	TC-15	484-.05	DT4S5	RF Bypass Pwr. Supp.
16	.05	400	502157	TP426	S-4-05	TC-15	484-.05	DT4S5	IF Screen Bypass
17	.01	400	502151	TP421	S-4-01	TC-11	484-.01	DT4S1	Osc. Feedback SW
18	.05	400	502157	TP426	S-4-05	TC-15	484-.05	DT4S5	RF Screen Bypass
19	.1	200	502155	TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
20	.05	200	502153	TP425	S-4-05	TC-15	484-.05	DT4S5	AVC Filter*
21	110	500	502160	MC235	M0.5-31	1FM-31	1438-.0001	5W5T1	Audio Plate Bypass
22	260	500	502271	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	RF Bypass Diode
23	68	500	502167	MC230		MS-47	1469-.00007	5W5Q7	Osc. Coupling SW
24	430	500	502163	MCB243	M0S.5-34	MS-34	1469-.0004	5R5T4	RF Coupling SW
25	39	500	502182	MC223	M0.5-44	1FM-44	1468-.00004	5W5Q4	Fixed Trimmer
26	2	500	502411						RF Coupling SW
27	50	500	502159	MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Grid Cond.
28	10	500	502295	MC215	M0.5-41	MS-41	1468-.000001		RF Trans. Fixed Tuned
29	39	500	502182	MC223	M0.5-44	1FM-44	1468-.00004	5W5Q4	Fixed Trimmer
30	82	500	502166						Fixed Padder SW
31	670	500	502164						" " "
32	270	500	502161	MCB240	M0S.5-325	1FM-325	1469-.00025	5R5T25	Fixed Tuning Osc. P.B.
33	1000	500	502165	MC255	M0.3-21	1FM-21	1468-.001	1W5D1	Screen Bypass P.B.

*Used in Some Models Only.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR CHIEF PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
34(A)	1.0MΩ	1	502117	MK-01	D13-133	A.-56-2	Volume Control.
(B)	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 33A per instructions
(C)	Switch		" "	M36	41	SW-A	" " " " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIR CHIEF PART No.	IRC PART No.	
35	4.7 Meg.	½	502468	BTS-4.7 Meg	Yl.-Vi.-Grn. RF Grid
36	560Ω	½	502127	BTS-560	Grn.-Blue-Br. RF Cathode
37	100KΩ	½	502132	BTS-100K	Br.-Blk.-Yl. RF Screen Dropping
38	22KΩ	½	502130	BTS-22K	Red-Red-Or. Osc. Grid
39	33KΩ	1	502466	BTA-33K	Or.-Or.-Or. Osc. Screen Dropping
40	220Ω	½	502125	BW-½-220	Red-Red-Br. IF Cathode
41	2.2 Meg.	½	502135	BTS-2.2 Meg	Red-Red-Grn. AVC Network
42	68KΩ	½	502467	BTS-68K	Blue-Gray-Or. IF Screen Dropping
43	47KΩ	½	502131	BTS-47K	Yl.-Vi.-Or. Diode Load
44	4.7 Meg.	½	502468	BTS-4.7 Meg	Yl.-Vi.-Grn. 1st AF Grid
45	2200Ω	½	502128	BTS-2200	Red-Red-Red 1st AF Cathode
46	220KΩ	½	502133	BTS-220K	Red-Red-Yl. 1st AF Plate Load
47	100KΩ	½	502132	BTS-100K	Br.-Blk.-Yl. 1st AF Plate Filter
48	2.2 Meg.	½	502135	BTS-2.2 Meg	Red-Red-Grn. 1st AF Screen Dropping
49	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. Output Grid
50	330Ω	2	502137	Bw-2-330	Or.-Vi.-Br. Fixed Bias
51	4700Ω	½	502291	BTS-4700	Yl.-Vi.-Red Tone Compensation
52	560Ω	½	502127	BTS-560	Grn.-Blue-Br. " "
53	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. AVC Network*

*Used in Some Models Only

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	AIR CHIEF PART No.	STANCOR PART No.	THORDARSON PART No.	
54	117V. @ .485A	300V.CT @ .058A	5V. @ 1.82A	6.2V @ 2.02A	502174	P-6120	T-13R20	Replacement Parts P-6120 and T-13R20 require new mounting holes.

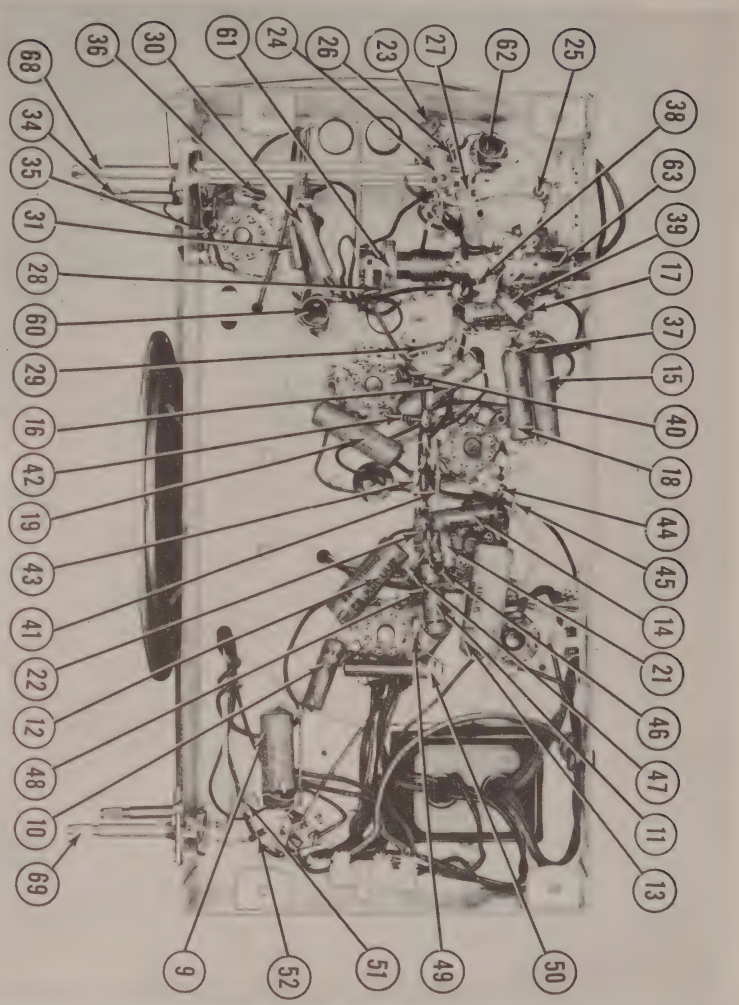
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIR CHIEF PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
55	9433Ω	3.6Ω	66Ω	.6Ω	504124	A-3878	T-14S64		Use: with speaker D-504205
55A					504206				Used with speaker E-504206
55B					504206				Used with speaker X-504206

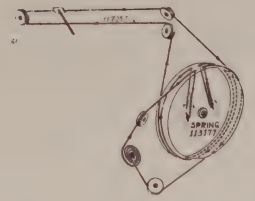
SPEAKER

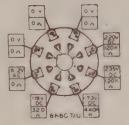
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD RES.	VC IMP.	AIR CHIEF PART No.	JENSEN PART No.		
56	1000Ω	3.5Ω	D504205	ST-5671†		†Improvise mounting bracket.
	CONE DIA.	VC DIA.				
57	8-3/16"	9/16"	504125	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.		
56(A)			X-504205			
57(A)			504207			
56(B)			E-504205			
57(B)			504209			

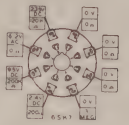
CHASSIS—BOTTOM VIEW

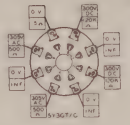


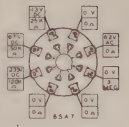
VOLTAGE AND RESISTANCE ANALYSIS CHART











1. DC voltage measurements are at 20,000 ohms per volt; AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PARTS LIST AND DESCRIPTIONS

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AIR CHIEF PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
58	Loop Ant.	0Ω	0Ω	502186		
59	BC Ant. Coil	.8Ω	3Ω	502112		
60	SW Ant. Coil	.8Ω	0Ω	502110		
61	BC RF Coil	11Ω	0Ω	502113		
62	BC Osc. Coil		5Ω	502114		Adjustable Iron Core Slug
63	SW Osc. Coil	.8Ω	0Ω	502111		
64	Input IF	20Ω	20Ω	502102	16-3658	
65	Output IF	19Ω	19Ω	502103	16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA AIR CHIEF PART No.		INSTALLATION NOTES
66	bayonet	6-8	0.25	blue	110629		"
67	"	"	"	"	"		"

MISCELLANEOUS

ITEM No.	PART NAME	AIR CHIEF PART No.	NOTES
68	Band Switch	502119	
69	Tone Switch	502116	
70	Switch	502120	Push Button Auto. Tuning
71	Tuning Cap.	502122	3 Gang Variable Cap.
A9	Trimmer	502106	SW Oscillator 2-15 MMF
A11	"	Part of 502109	BC Meter Oscillator 2-15 MMF
A10	"	502108	SW Antenna 2-15 MMF
A12	"	Part of 502109	BC Meter Antenna 10-40 MMF
	Dial Scale	502215	Glass
	Escutcheon	502656	Push Button
	Knob	502704	Volume & Tuning
	"	502705	Tone & Band Switch
	Push Button	502496	Automatic Tuning
71	Tuning Cap.	502122	3 Gang Variable Cap.

PUSHBUTTON ADJUSTMENTS

The pushbuttons from left to right (facing front of receiver) cover the following frequency ranges: 540 to 1000KC, 650 to 1300KC, 850 to 1300KC, 975 to 1600KC, 975 to 1600KC. To adjust the pushbuttons to desired stations, proceed as follows:

1 - Set band switch on "AM" position and turn set on to allow for warm-up period.

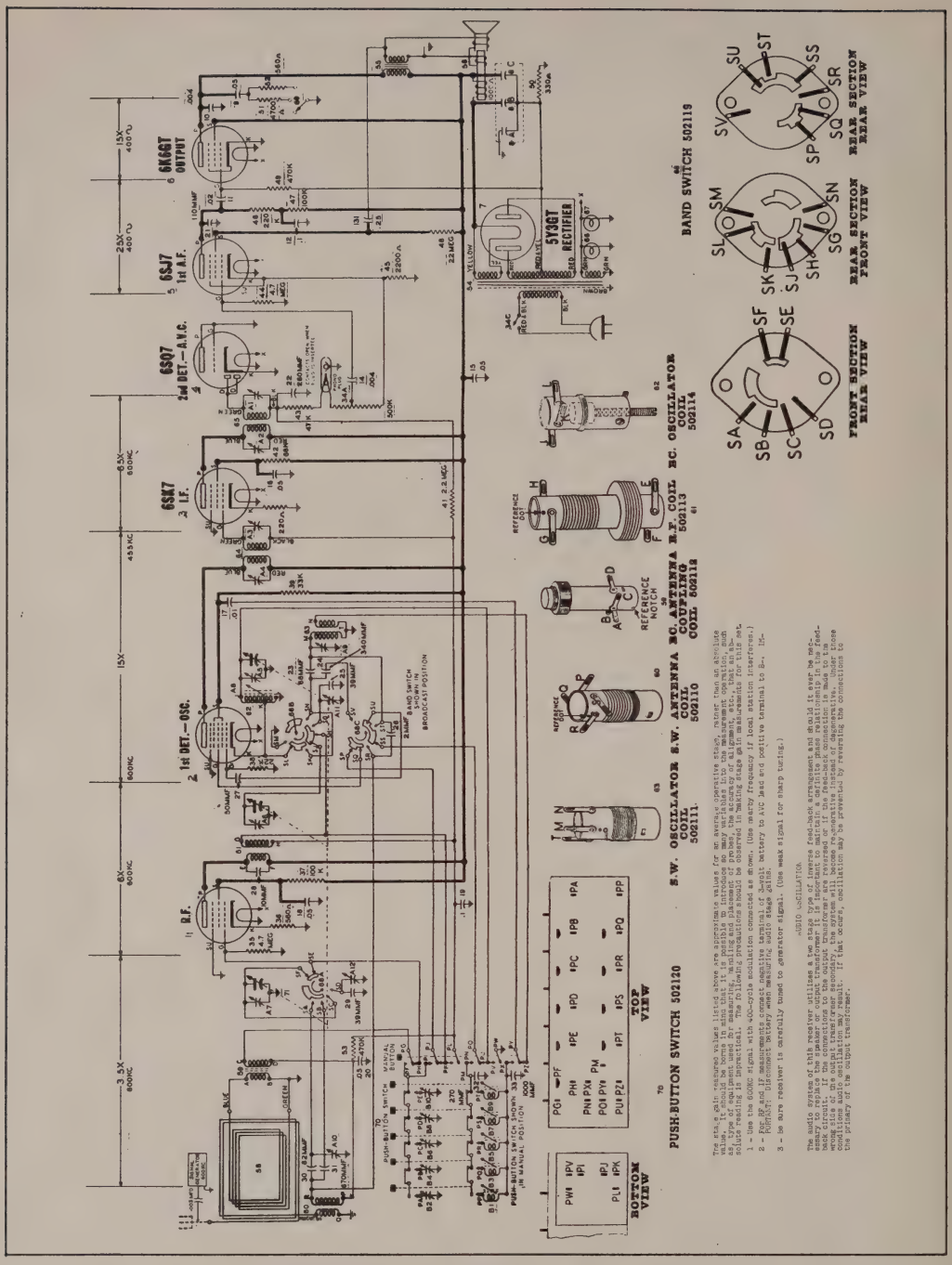
2 - Select a station which falls in the frequency range of the pushbutton on the extreme left and adjustments B1, B2 (540-1000KC).

3 - Push in "Manual" button and tune in the station to identify program.

4 - Push in button on extreme left and adjust B1 to tune in station (adjust for deepest tone). Adjust B2 for maximum volume of station.

5 - Proceed in the same manner for setting up the remaining push-buttons, always selecting a station within the frequency range of the pushbutton and its associated adjustments. Adjust B3, B5, B7, and B9 to tune in station. Adjust B4, B6, B8 and B10 for maximum volume.

SCHEMATIC DIAGRAM



The arrow path indicates values listed above are maximum values for an average receiver. Values may vary as much as 20% either way. It should be borne in mind that it is impossible to introduce an instrument into the circuit without changing the values existing in that circuit. The values listed above are correct when using a 1,000 ohm per volt meter or similar type of equipment. Any good modern meter should be satisfactory for these measurements.

1 – Use the 600KC signal with 400-cycle modulation connected as shown. (Use nearby frequency if local station interferes.)

2 – Pwr RF and IF measurements connect negative terminal of 3-volt battery to A.V.C. lead and positive terminal to B—. IMPORTANT: Disconnect battery when measuring audio stage volts.

3 – Be sure receiver is accurately tuned to generator signal. (Use weak signal for sharp tuning.)

AUDIO OSCILLATION

The audio system of this receiver utilizes a two stage type of inverse feed-back arrangement and should it ever be necessary to replace the output transformer, it is important that the secondary leads be connected correctly to the feed-back circuit. If the connections to the output transformer are reversed or if the feed-back connection is made to the wrong terminal, audio oscillation may result. This oscillation is of such a frequency that it cannot be heard but under these conditions audio distortion may be present. The correct connections to the output transformer secondary are shown above. Under these conditions audio oscillation may be prevented by reversing the connection to the primary of the output transformer.

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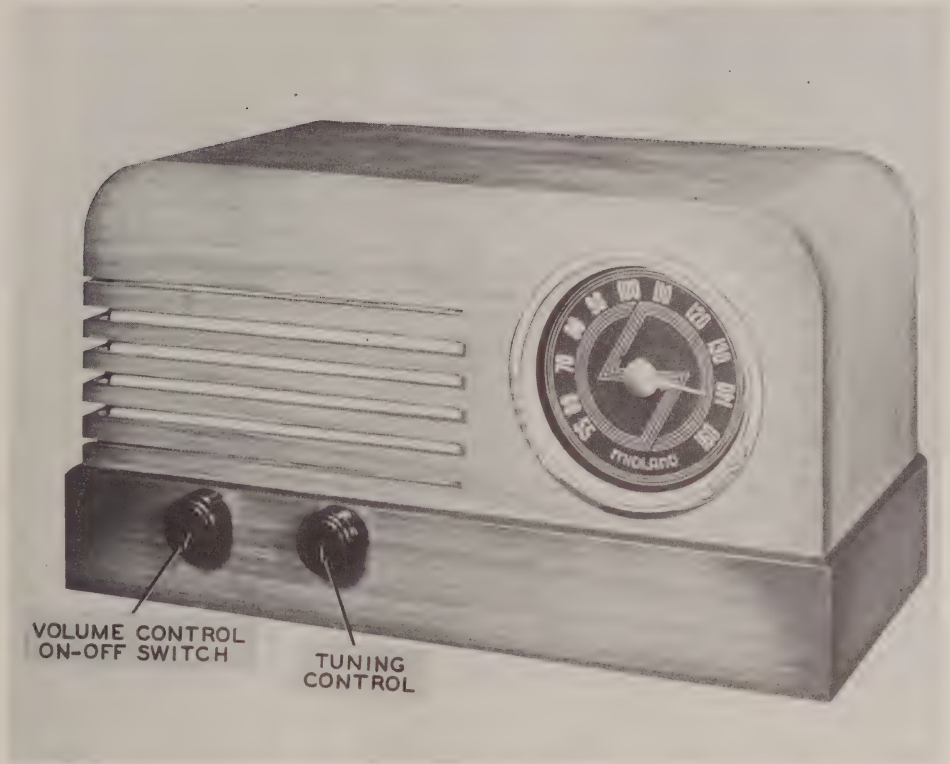
MIDLAND
MODEL M6B



MIDLAND
MODEL M6B

MIDLAND MODEL M6B

TRADE NAME Midland Model M6B
MANUFACTURER Midland Mfg. Co., Decorah, Iowa
TYPE SET AC-DC Superheterodyne
TUBES (SIX) Types 12SA7 Converter, 12SG7 IF Amp., 12J5GT Det.-AVC, 12J5GT 1st AF Amp., 35L6GT Power Output, 35Z5GT Rectifier.

POWER SUPPLY 117 Volts AC-DC Rating .260 Amps. @ 117 Volts AC
TUNING RANGE—BROADCAST 550-1680KC **SHORT WAVE**

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to pin #8 (grid) of 12SA7. Low side to B-.	455KC	High freq. end of dial.	Across voice coil.	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and receiver B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
"	"	1600KC	1600KC	"	A5	"
200MMFD	High side to ext. ant. lead. Low side to B-.	1400KC	Tune in 1400 KC signal.	"	A6	Adjust for maximum output.
"	"	"	"	"	37	Adjust position of slug in ant. coil for maximum output. Repeat adjustment on A6 for maximum output.
"	"	600KC	Tune in 600KC signal.	"	A7	Rock dial and adjust for maximum output. Check A5 at 1600 KC. If adjustment is necessary, repeat A6 at 1400KC.

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting. Secure slug on ant. coil (37) after final adjustment. Use isolation transformer or isolating capacitor during RF alignment.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: MIDLAND PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SG7	12SG7	8uK	
3	Det.-AVC	12J5GT	12J5GT	6Q	
4	1st AF	12J5GT	12J5GT	6Q	
5	Power Output	35L6GT	35L6GT	7uC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	MIDLAND PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7(A)	30	150		TM129	M-30-150	TA-230	PRS150-30	EZ42215	Filter - Red
(B)	20	150			DHN-2x20-150		PRS150-20-20		" - Yellow
(C)	20	150				UT-201			" - Orange
8	10	50		TC32	M-10-50	TA-510	PRS50-10	BR1D5	Cath. Bypass
9	.05	400		TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
10	.05	400		TP426	S-4-05	TC-15	484-.05	DT4S5	Line Isolating
11	.01	400		TP421	S-4-01	TC-11	484-.01	DT4S1	35L6 Plate Bypass
12	.01	400		TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
13	.002	600		TP405	S-6-002	TC-22	684-.002	DT6D2	" "
14	.05	400		TP426	S-4-05	TC-15	484-.05	DT4S5	" "
15	.05	400		TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
16	500	500		MC245	MO.5-35	1FM-35	1468-.0005	5W5T5	Audio Plate Bypass
17	200	500		MC237	MO.5-32	1FM-32	1468-.0002	5W5T2	Rf Bypass Diode
18	1000	500		MC255	MO.5-21	1FM-21	1468-.001	1W5D1	RF Screen Bypass
19	100	500		MC215	MO.5-31	1FM-31	1468-.0001	5W5T1	Osc. Grid Cond.
20	5	500		MC205	MO.5-55	1FM-55	1468-.00005	5W5V5	Fixed Trimmer
21	50	500		MC225	MO.5-45	1FM-45	1468-.00005	5W5Q5	Ant. Coupling

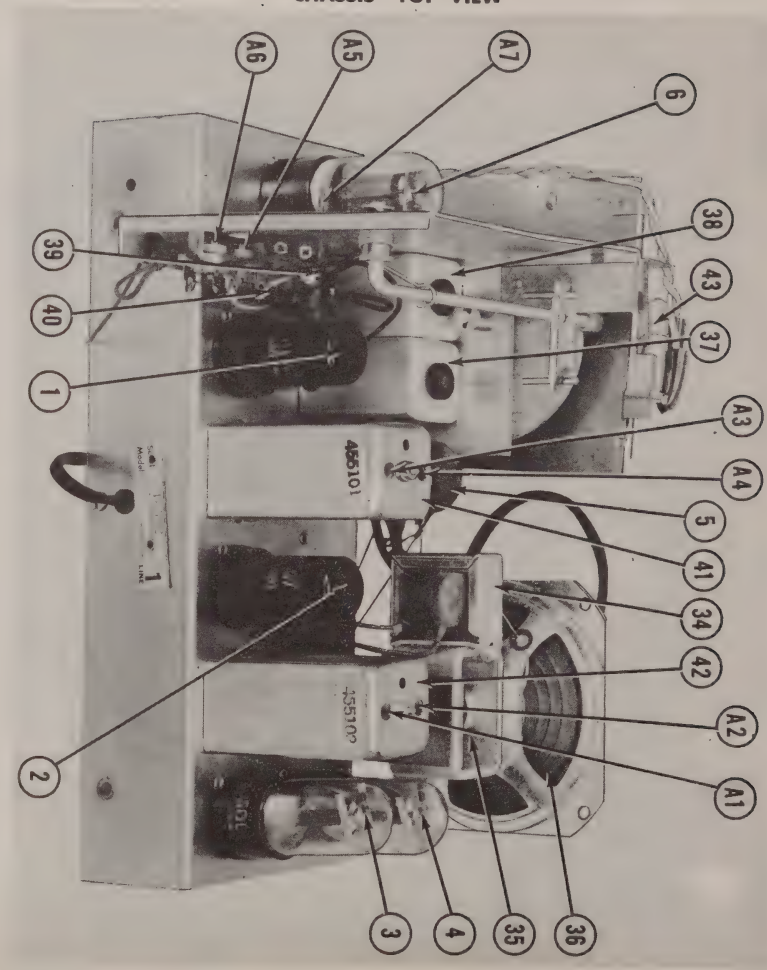
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	MIDLAND PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22(A)	500KΩ	1		M26	D1-133	M-80-A	Volume Control
(B)	Shaft			Not Req.	A	Not Req.	Attach to 22A per instructions.
(C)	Switch			M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	MIDLAND PART No.	IRC PART No.	IDENTIFICATION CODES
23	47KΩ	½		BTS-47K	Yl.-Vl.-Or. Ant. Loading
24	47KΩ	½		BTS-47K	Yl.-Vl.-Or. Osc. Grid
25	4700Ω	½		BTS-4700	Yl.-Vl.-Red Osc. Screen Dropping
26	2 Meg.	½		BTS-2.2 Meg.	Red-Blk.-Grn. AVC Network
27	510KΩ	½		BTS-470K	Grn.-Br.-Yl. Detector Grid
28	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue 1st AF Grid
29	510KΩ	½		BTS-470K	Grn.-Br.-Yl. " " Plate Load
30	510KΩ	½		BTS-470K	Grn.-Br.-Yl. Output Grid
31	100Ω	5		AB-100	Output Cathode
32	1500Ω	1		BTA-1500	Br.-Grn.-Red Filter
33	100Ω	5		AB-100	Filter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MIDLAND PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
34	2330Ω	2.2Ω	210Ω	.65Ω		A-3376*	T-13842†		*Bend mounting tabs down and mount to original bracket. †Mount on chassis or make new mounting bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MIDLAND PART No.	JENSEN PART No.		
35	FIELD PM	VC IMP. 2.2Ω	421022W5T	ST-1131		†Use original clamp-style mounting bracket.
36	CONE DIA. 3-15/16"	VC DIA. 11/16"				

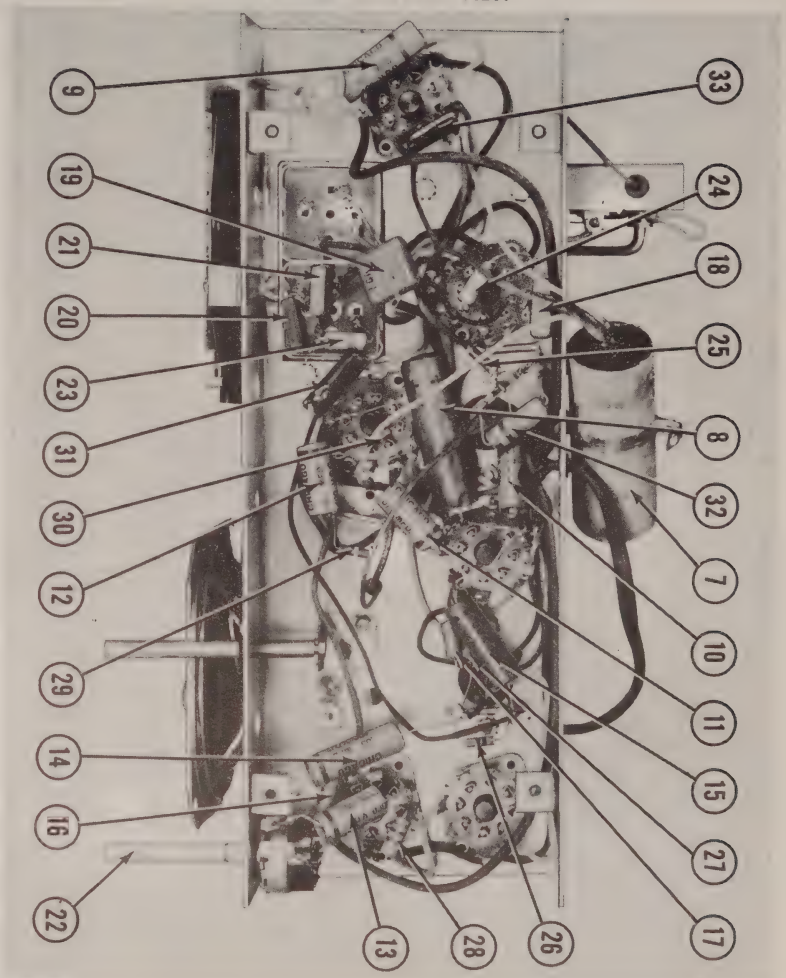
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	MIDLAND PART No.	MEISSNER PART No.	
37	Ant. Coil	1Ω				Slug Tuned and Ganged with Osc. Coil
38	Osc. Coil	3.5Ω				" " " " Ant. "
39	Osc. Pad Coil	5.1Ω				Slug Adjustment
40	Osc. Series Coil	.5Ω				
41	Input IF	20Ω	21Ω	455101	16-6658	
42	Output IF	20.5Ω	20.5Ω	455102	16-6660	

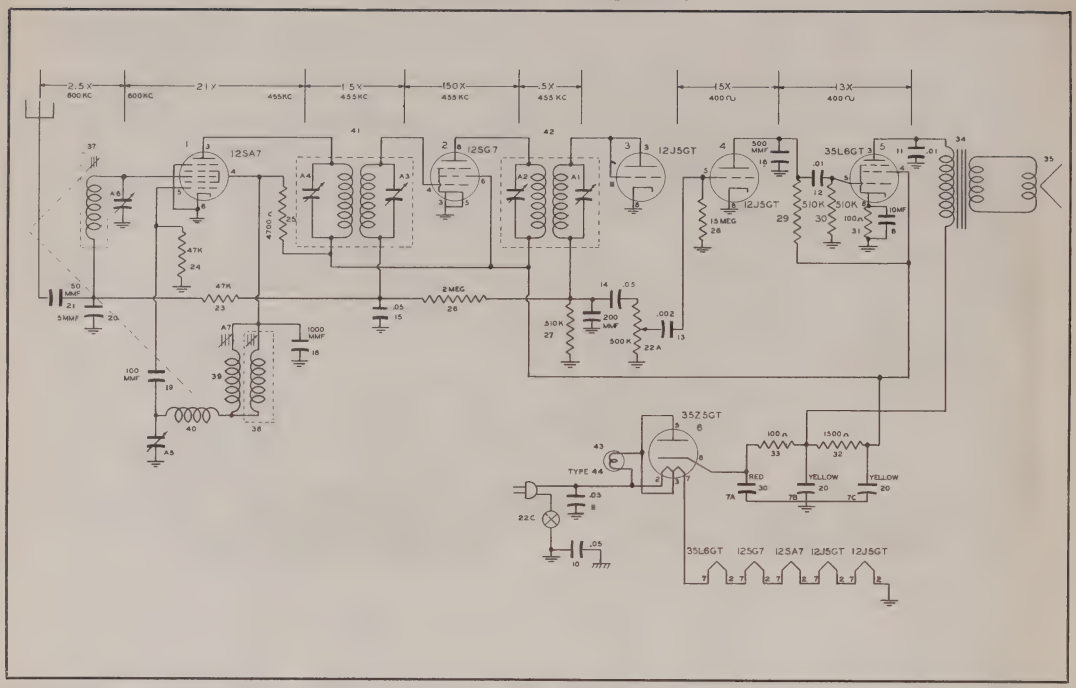
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MIDLAND PART No.		
43	bayonet	6-8	.25	Blue			Type 44

CHASSIS—BOTTOM VIEW

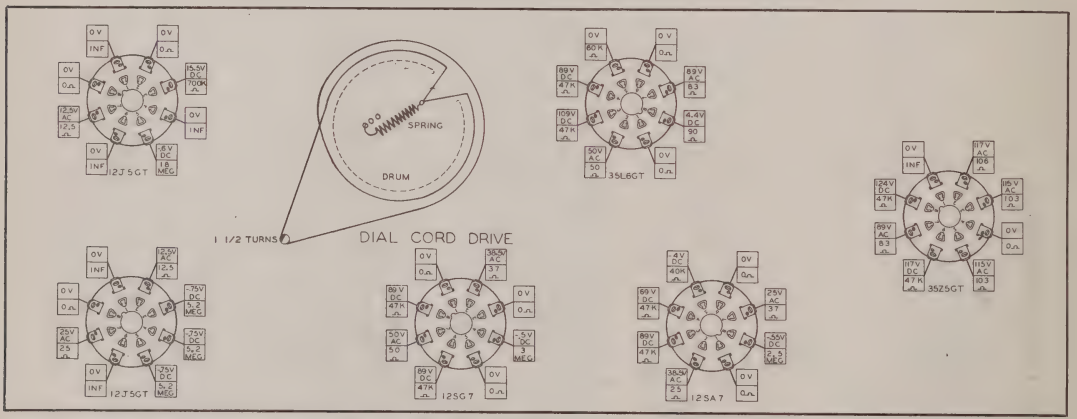


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for average operative stages, rather than absolute values. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3 volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1. DC voltage measurements are at 20,000 ohms per volt; AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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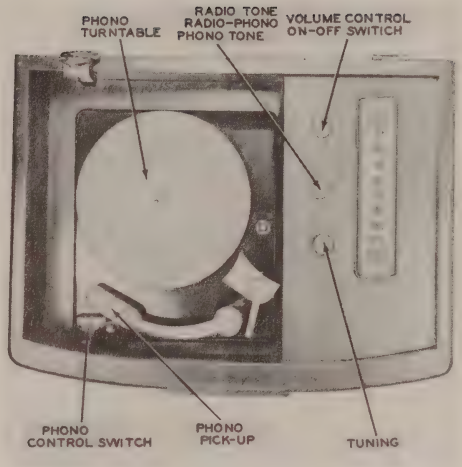


BENDIX
MODEL 656 A

BENDIX
MODEL 656 A

BENDIX MODEL 656A

TRADE NAME	Bendix Model 656A
MANUFACTURER	Bendix Radio Division, Bendix Aviation Corp., Baltimore 4, Maryland
TYPE SET	AC Superheterodyne Radio-Phonograph Combination. Self Contained Loop Antenna
TUBES (SIX)	Types 14A7 RF Amp., 14Q7 Converter, 14A7 IF Amp., 14B6 Det.-AVC-AF, 35A5 Power Output, 35Y4 Rectifier.
PHONOGRAPH	Bendix Model G-205 Record Changer
POWER SUPPLY	105-125 Volts AC Rating .235 Amps. @ 117 Volts AC
TUNING RANGE—BROADCAST	535 to 1725KC **SHORT WAVE**

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to pin #6 of 14A7 (RF Amp.). Low side to B-.	455KC	Max. to right	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead to receiver B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
50 MMFD	High side to ext. ant. Low side to B-.	1550KC	7" from left end of dial back-plate.	"	A5	Adjust for maximum output. Use isolation transformer or isolating capacitor.
"	"	"	"	"	A6,A7	"
"	"	955KC	5¼" from left end of dial back-plate.	"		Check
"	"	580KC	3-1/16" from left end of dial back-plate.	"		Calibrate

Adjust dial pointer 2-3/8" from left end of dial back-plate with tuning control turned fully counter-clockwise. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		BENDIX PART No.	STANDARD REPLACEMENT		
1	RF Amp.	14A7/12B7	14A7/12B7	8V	
2	Converter	14G7	14A7	8AL	
3	IF Amp.	14A7/12B7	14A7/12B7	8V	
4	Det.-AVC-AF	14B6	14B6	8W	
5	Power Output	35A5	35A5	6AK	
6	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

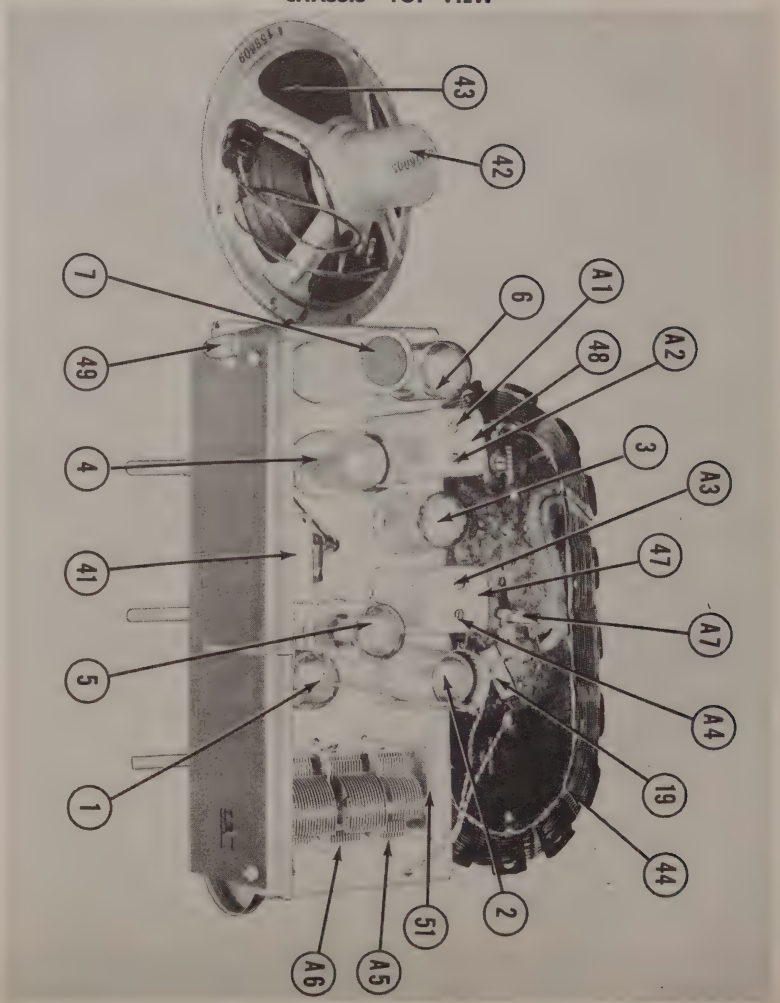
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	BENDIX PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
7(A)	60	150	CE3A00	FP357	DY-60+40+20-150	UT-501		UP4CJ44	■ Filter
(B)	40	150				EL-24			▲ "
(C)	20	150							"
8	.05	400	CP4T40	TP426	S-4-05	TC-15	484-.05	DT4S5	Line Filter
9	.1	400	CP4T51	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolating
10	.02	400	CP4T34	TP423	S-4-02	TC-12	484-.02	DT4S2	35A5 Plate Bypass
11	.04	400	CP4T38	TP425	S-4-04	TC-14	484-.04	DT4S4	Tone Compensation
12	.05	400	CP4T40	TP426	S-4-05	TC-15	484-.05	DT4S5	Audio Coupling
13	.006	400	CP4T20	TP409	S-6-006	TC-26	484-.006	DT6D6	" "
14	.1	200	CP2T51	TP428	S-4-1	TC-1	484-.1	DT4P1	Feedback
15	.006	400	CP4T20	TP409	S-6-006	TC-26	484-.006	DT6D6	RF Bypass Vol. Cont.
16	.05	400	CP4T40	TP426	S-4-05	TC-15	484-.05	DT4S5	IF Cath. Bypass
17	.05	400	CP4T40	TP426	S-4-05	TC-15	484-.05	DT4S5	Phono. Coupling
18	.05	400	CP4T40	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
19	.004	600	CP6T16	TP407	S-6-004	TC-24	684-.004	DT6D4	Ant. Coupling
20	220	500	CM5A30	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass
21	47	500	CM5A14	MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	Osc. Grid Cond.
22	47	500	CM5A14	MC225	M0.5-45	1FM-45	1468-.00005	5W5Q5	Fixed Trimmer
23	3.3	300	CC9A16						RF Coupling

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	BENDIX PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
24(A)	1 Meg.	1	RV4S00		D17-137X		Volume Control
(B)	Shaft		Not Req.		A - 41		Attach to 24A per instructions.
(C)	Switch		" "				" " " " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	[illegible]ENDIX PART No.	IRC PART No.	
25	.22Ω	½	RC1H10	BW-½-220	Red-Red-Br. RF Cathode
26	22KΩ	½	RC1H40	BTS-22K	Red-Red-Or. Osc. Grid
27	15 Meg.	½	RC1H76	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
28	3.3 Meg.	½	RC1H68	BTS-3.3 Meg	Or.-Or.-Grn. " "
29	2200Ω	½	RC1H28	BTS-2200	Red-Red-Red IF Cathode
30	220KΩ	½	RC1H54	BTS-220K	Red-Red-Yl. 1st AF Plate Load
31	4.7 Meg.	½	RC1H70	BTS-4.7 Meg	Yl.-Vi.-Grn. 1st AF Grid
32	470KΩ	½	RC1H58	BTS-470K	Yl.-Vi.-Yl. Diode Load
33	47KΩ	½	RC1H44	BTS-47K	Yl.-Vi.-Or. Tone Compensation
34	6800Ω	½	RC1H34	BTS-6800	Blue-Gray-Red " "
35	470KΩ	½	RC1H58	BTS-470K	Yl.-Vi.-Yl Output Grid
36	150	1	RW1B14	BW-1-150	Br.-Grn.-Br. " Cathode
37	33Ω	1	RW1A08	BW-1-33	Surge Limiter
38	200Ω	2	RC4A16	BW-2-200	Red-Blk.-Br. Filter
39	1200Ω	1	RC3H25	BTA-1200	Br.-Red-Red "
40	220KΩ	½	RC1H54	BTS-220K	Red-Red-Yl. Line Isolating

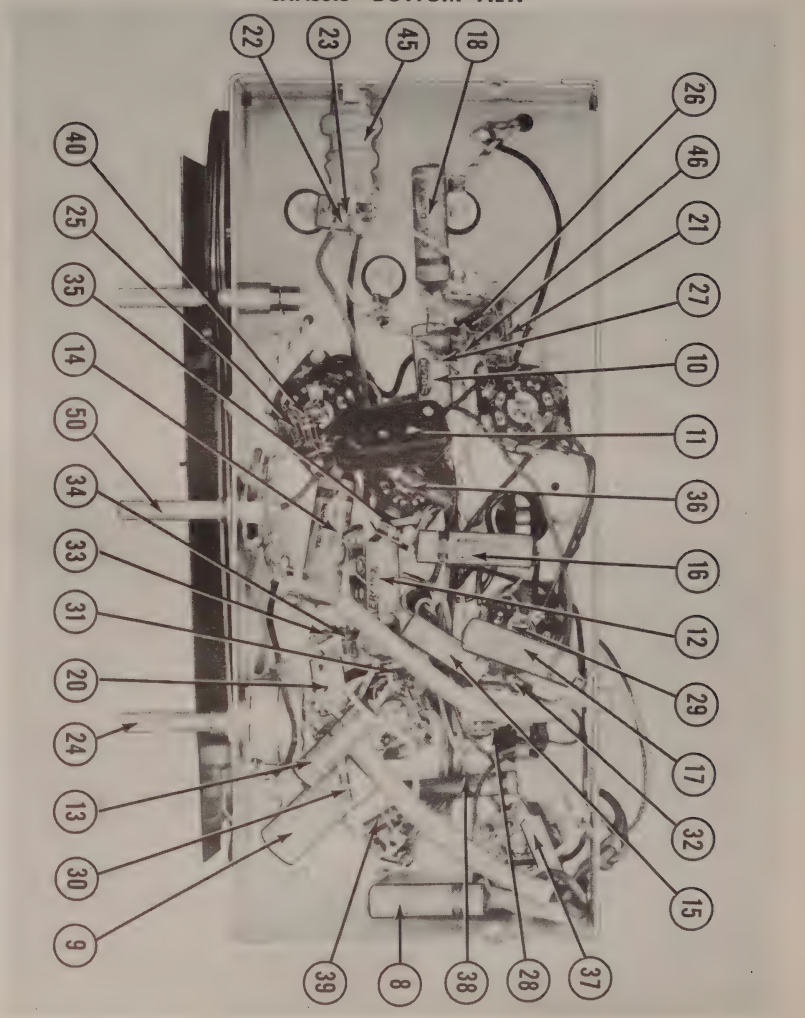
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		[illegible]ENDIX PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
41	2350Ω	3.6Ω	175Ω	.8Ω	T[illegible]	A-3876	T-13[illegible]*		*Drill one new mounting hole.

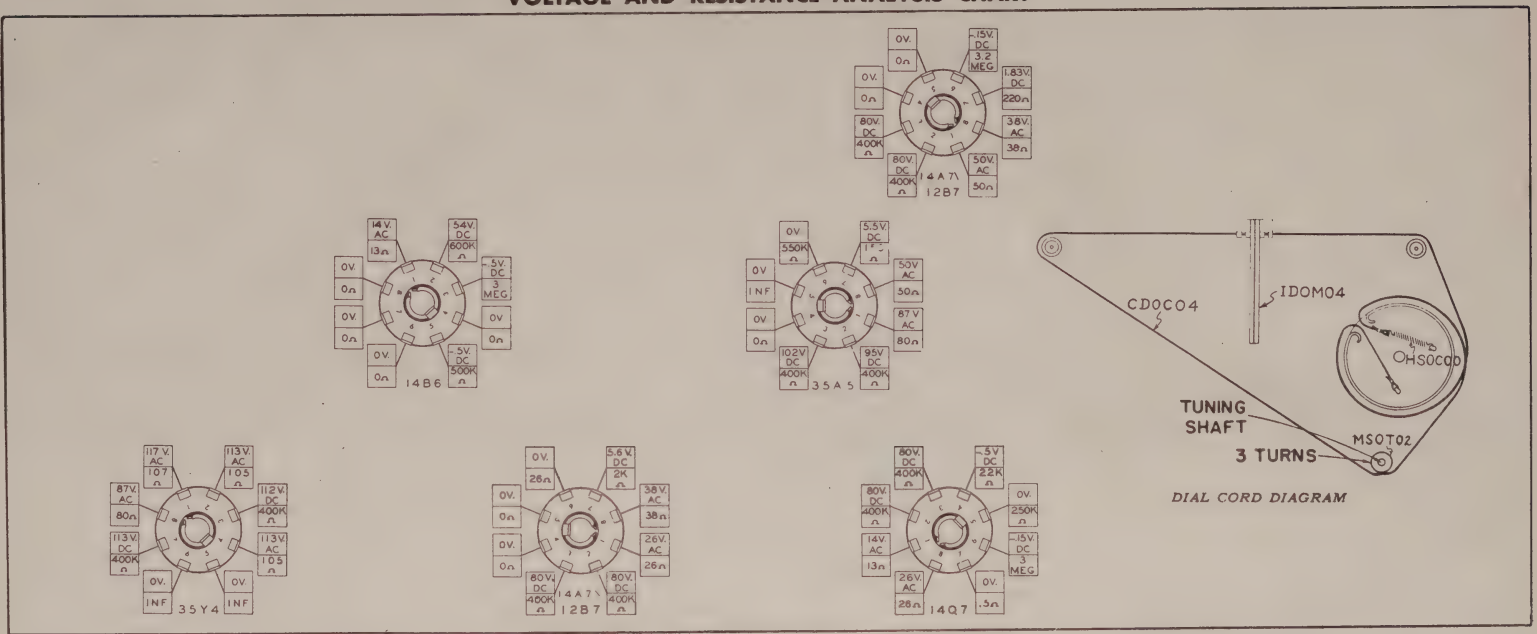
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	[illegible]ENDIX PART No.	JENSEN PART No.		
42	[illegible]	3.2Ω	[illegible]9R00	ST-11[illegible]		
	CONE DIA.	VC DIA.				
43	5-7/8"	3/4"	[illegible]T HSG. ILG REPLACEMENT - USE CHASSIS SPEAKER UNIT			
			CS6R00 - Voice Coil w/Cone Assembly			(Code 288)
			CS6R01 - " "	" "		(Code 189)
			CS6R02 - " "	" "		(Code 290)
			CS6R03 - " "	" "		(Code 285)
			CS6R04 - " "	" "		(Code 191)
			CS6R05 - " "	" "		(Code 186)
			CS6R06 - " "	" "		(Code 371)

CHASSIS—BOTTOM VIEW



VOLTAGE AND RESISTANCE ANALYSIS CHART



1. DC voltage measurements are at 20,000 ohms per volt; AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PARTS LIST AND DESCRIPTIONS

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA BENDIX PART No.	REPLACEMENT DATA MEISSNER PART No.	INSTALLATION NOTES
44	Loop ant.	.5Ω	0Ω	ALC05		
45	RF Coil	57Ω	2.1	TR6L0C		
46	Osc. Coil	.5Ω	4Ω	L06B0C	14-1040	
47	Input IF	29Ω	29Ω	T10C01	16-6588	
48	Output IF	25Ω	25Ω	T10D01	16-6360	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA BENDIX PART No.	REPLACEMENT DATA	INSTALLATION NOTES
49	bayonet	6-8	0.15	brown			#47

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
50	Switch	SW4C00	Radio Tone-Phono Tone
51	Tuning Cap.	CVCC00	Three-Gang Variable Capacitor
	Dial	DSGA08	Glass
	Retainer	DX0R05	Dial
	Hinge	HJ0H00	Lid (Bronze)
	Knob	KL0B00	Index (Mottled Brown)
	"	KC0B04	Mottled Brown
	Clamp	HC0C03	Dial Cable
	Bracket	HB0A03	Loop Antenna
	Insulating Tube	IT0C01	Filter Capacitor
	Jack (Pickup)	JR1S00	1 Pin
	" (Motor)	JP2S03	2 Pin
	Lid Support	HJ0L00	Cabinet
	Rubber Foot	RU0F02	"

BENDIX 656A

1 - Remove knobs.

2 - Remove cardboard back (six screws.)

3 - Disconnect speaker plug, phono motor jack, on and off switch plug.

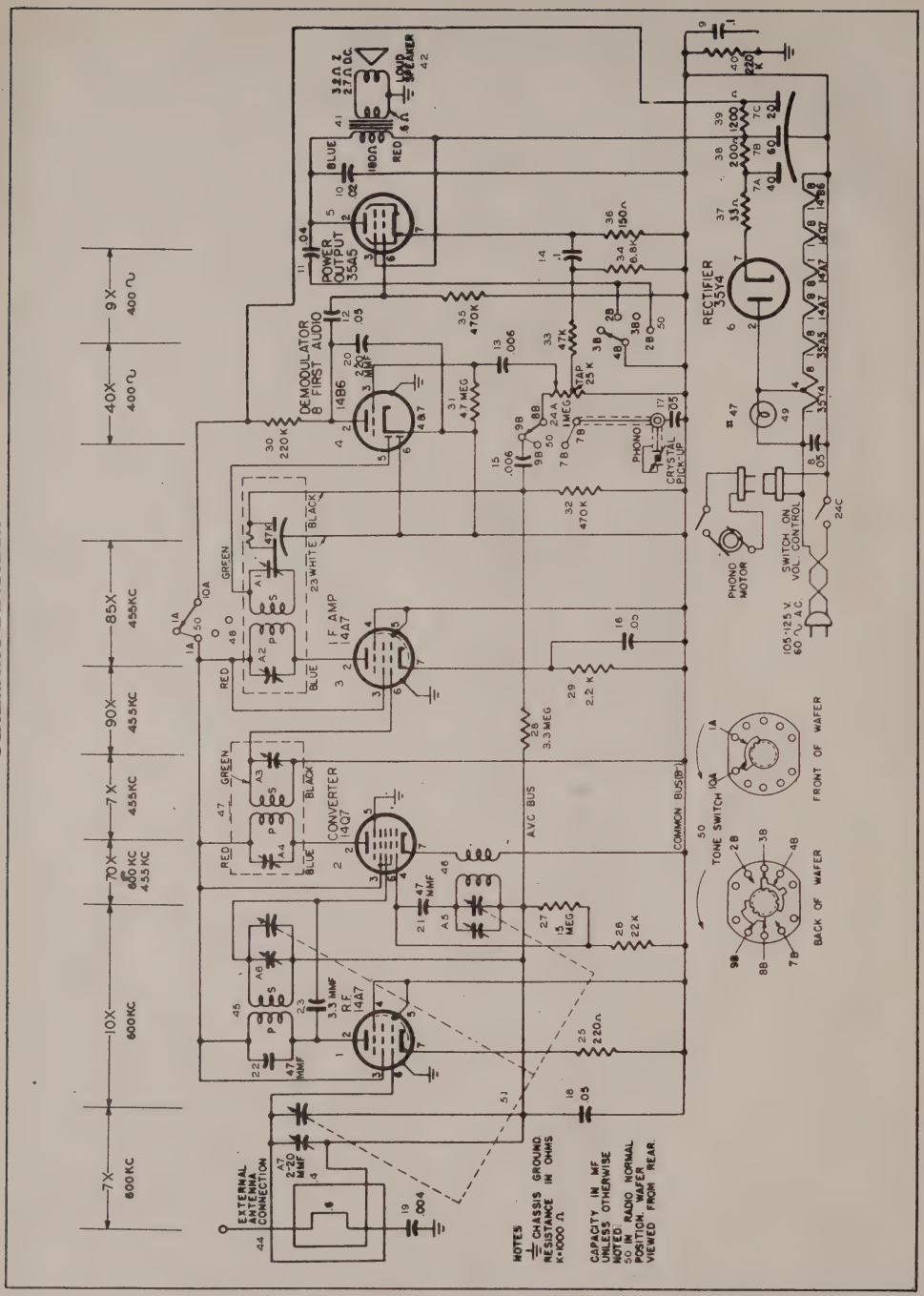
4 - Loosen cardboard clips holding leads.

5 - Remove 3 bolts holding chassis board.

6 - Remove chassis.

7 - Remove speaker.

SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for average operative stages, rather than absolute values. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3 volt battery bias substituted for measurement.

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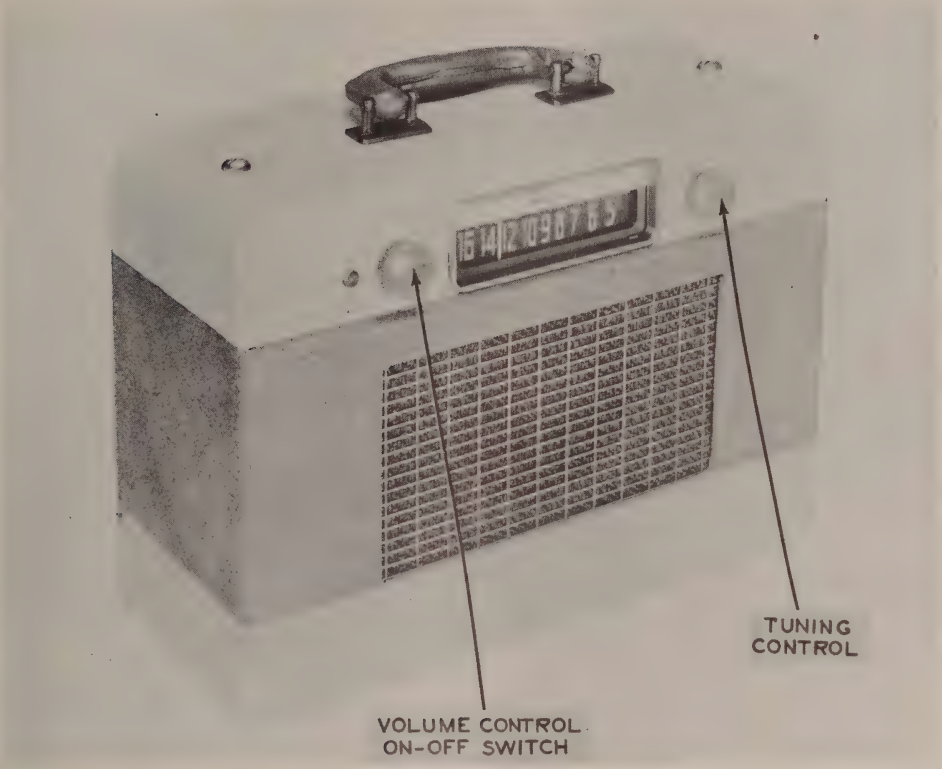


AIRLINE MODEL 64BR-1051A

TRADE NAME Airline Model 64BR-1051A
MANUFACTURER Montgomery Ward & Co., 619 Chicago Ave., Chicago, Illinois
TYPE SET AC - DC Battery Superheterodyne - Self Contained Loop Antenna
TUBES (FIVE) Types 1A7GT Converter, 1N5GT IF Amp., 1H5GT Det.-AVC-Audio, 1A5GT Power Output, 35Z5GT Rectifier

POWER SUPPLY 105-125 Volts AC-DC, or 6 Volts "A" Battery & 90 Volt "B" Battery Rating .25 Amp. @ 117VAC
TUNING RANGE—BROADCAST 530-1650KC **SHORT WAVE**

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to 1A7GT grid cap. Low side to B-.	455KC	High freq. end of dial. Rotor full open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Insert a 1 megohm resistor between loop ant. and 1A7GT grid cap. Use isolation transformer if available when aligning set connected to AC line.
"	"	1650KC	"	"	A5	"
200MMFD	High side to ext. ant. clip. Low side to ext. ground clip.	1400KC	1400KC	"	A6	Adjust for maximum output.

Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1A7GT	1A7GT	7Z	
2	IF Amp.	1N5GT	1N5GT	5Y	
3	Det.-AVC-AF	1H5GT	1H5GT	5Z	
4	Output	1A6GT	1A6GT	6X	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6(A)	20	150	BE119-126S	FP407	DY-40+30+20-150	EL-443		UP6CJ44	▲ Filter
(B)	40	150							■ "
(C)	40	150							G "
(D)	200	10			DGM-250-12	UHC-212		BRH1225	"
5(A)	10	150	BE119-133			EL-452		UP6CJ44	▲ Filter*
(B)	80	150							■ "
(C)	80	150							O "
(D)	200	10				UHC-212		BRH1225	"
7	.02	400	BE100-26	TP423	S-4-02	TC-12	484-.02	DT4S2	Line Bypass
8	.25	120	BE100-135	TP430	S-4-25	TC-2	484-.25	DT4P25	Line Filter
9	.002	600	BE100-25	TP405	S-6-002	TC-22	684-.002	DT6D2	1A5 Plate Bypass
10	.01	200	BE100-78	TP421	S-4-01	TC-11	484-.01	DT4S1	Audio Coupling
11	.006	120	BE100-134	TP409	S-6-006	TC-26	484-.006	DT6D6	" "
12	.1	120	BE100-133	TP428	S-4-1	TC-1	484-.1	DT4P1	Filament Bypass
13	.01	120	BE100-127	TP421	S-4-01	TC-11	484-.01	DT4S1	Grid Return Bypass
14	.01	120	BE100-127	TP421	S-4-01	TC-11	484-.01	DT4S1	Screen Bypass
15	.2	400	BE100-110	TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolating
16	.05	120	BE100-128	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
17	100	500	BE129-5	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	Audio Plate Bypass
18	100	500	BE129-5	MC235	MO.5-31	1FM-31	1468-.0001	5W5T1	Osc. Grid Cond.
19	10	500		MC215	MO.5-41	MS-41	1468-.00001	5W5Q1	Fixed Trimmer

*Used in 25 Cycle Models Only.

CONTROLS

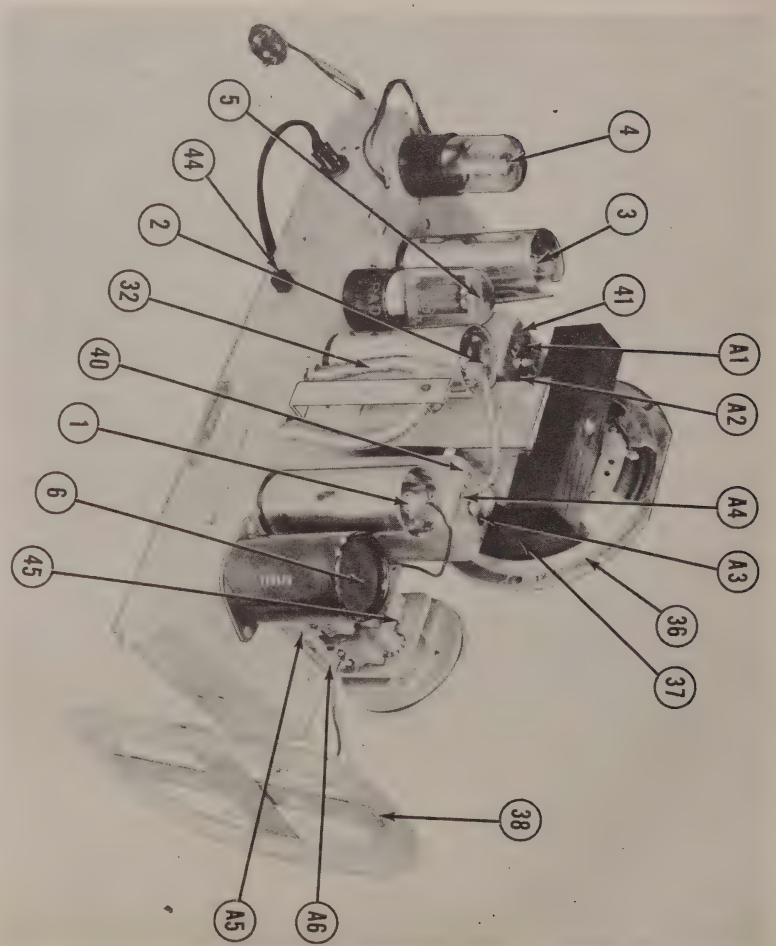
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
20(A)	1 Meg.	1	BE101-258	MK402	D13-137	AM-63-Z	Volume Control
(B)	Shaft		Not Req.	Not Req.	"	KSS-3	Attach to 20A per instructions
(C)	Switch		" "	M27	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
21	220KΩ	½	BEA-9B1-27	BTS-220K	Red-Red-Yl. Osc. Grid
22	3300Ω	½	BEA-9B1-16	BTS-3300	Or.-Or.-Red Anode Grid
23	68KΩ	½	BEA-9B1-84	BTS-68K	Blue-Gray-Or. Screen Dropping
24	10 Meg.	½	BEA-9B1-37	BTS-10 Meg.	Br.-Blk.-Blue IF Grid
25	3.3 Meg.	½	BEA-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
26	10 Meg.	½	BEA-9B1-37	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
27	1 Meg.	½	BEA-9B1-31	BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Plate Load
28	3.3 Meg.	½	BEA-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. Output Grid
29	680Ω	½	BEA-9B1-60	BTS-680	Blue-Gray-Br. Output Bias
30	22Ω	½	BEA-9B1-42	BW-½-22	Red-Red-Blk. Series Filament
31	2200Ω	½	BEA-9B1-66	BTS-2200	Red-Red-Red Filter
32	5452Ω	14	BE130-343	DG-300&DG-250	†Rectifier Line Dropping
33	1975Ω	6	BE130-344	AB-2000	Filter & Filament Dropping
34	25Ω	½	BEA-9B1-42	BW-½-25	Red-Grn.-Blk. Rectifier Ballast

†The I.R.C. Replacement DG-300 & DG-250 must be connected in series to replace the original 5452 resistor.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
35	16000Ω	3.2Ω	600Ω	.42Ω	105-132	A-3881	T-13843		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRLINE PART No.	JENSEN PART No.		
36	FIELD	VC IMP.	114-246B	1ST-106		
	PM	3.2				
37	CONE DIA.	VC DIA.	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			
	4-3/4"	9/15"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	AIRLINE PART No.	MEISSNER PART No.	
38	Loop Ant.	0Ω	1Ω	BEB-13E-10240		
39	Osc. Coil	5Ω	9.5Ω	BEA-13D-10239	14-1040 #	#Fabricate Mtg. Bracket
40	Input IF	27Ω	26Ω	BE10G-201B	16-6658 #	#Drill New Mtg. Holes
41	Output IF	32Ω	48Ω	BE10G-200B	16-3660 #	# " " " "

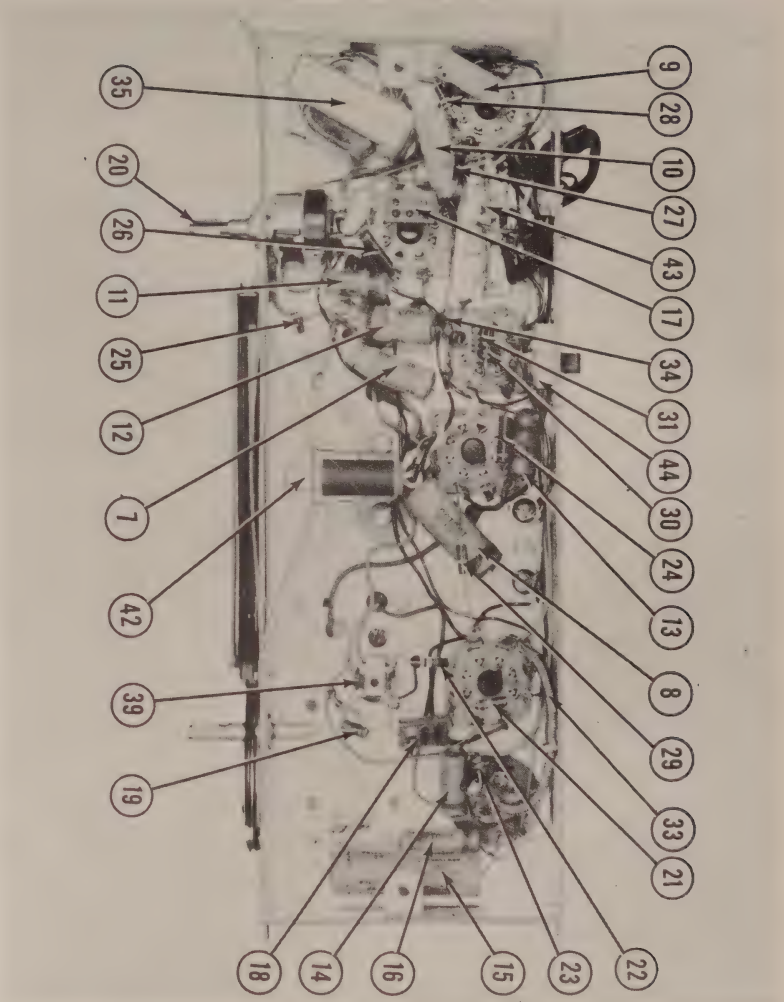
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					AIRLINE PART No.		
42	Bayonet	6-8	0.15	Brown	107249		#47

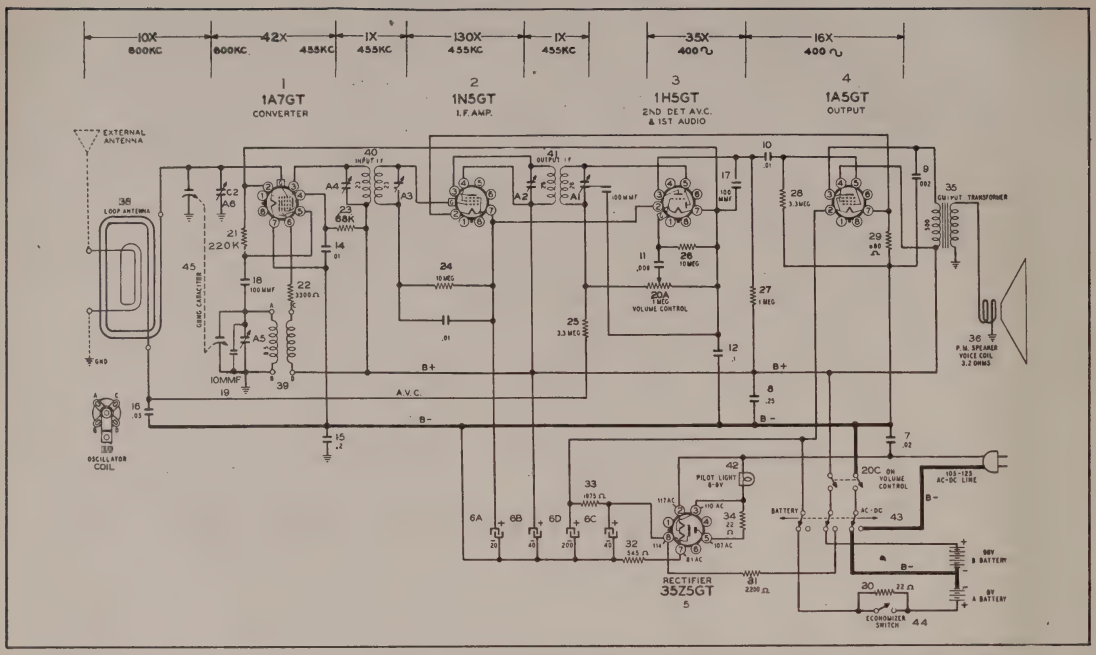
MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
43	Switch	BE125-161	Line-Battery Switch
44		BE125-156	Battery Economizer Switch
45	Tuning Cap.	BEB-8A-10113	2 Gang Variable Cap.
	Escutcheon	BE112-947	For Dial
	Knob	BE-128-660-39	Volume
	"	BE-128-661-39	Tuning

CHASSIS—BOTTOM VIEW

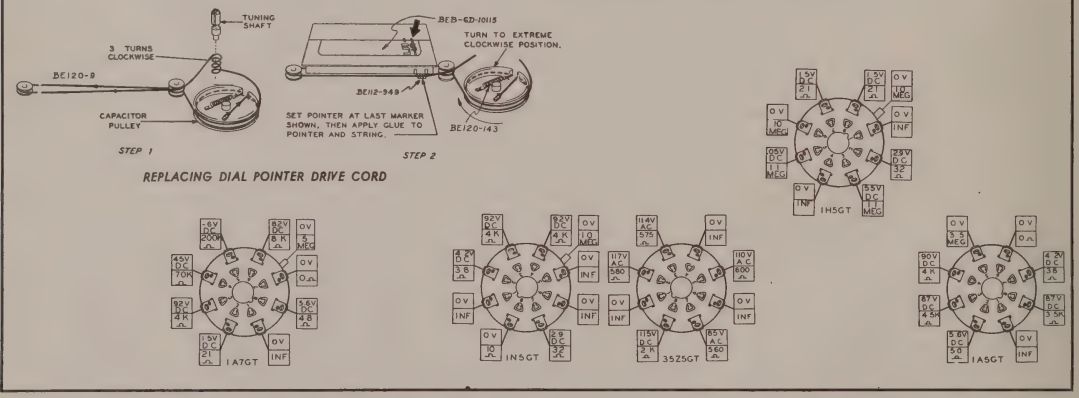


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to B-.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1. DC voltage measurements are at 20,000 ohms per volt; AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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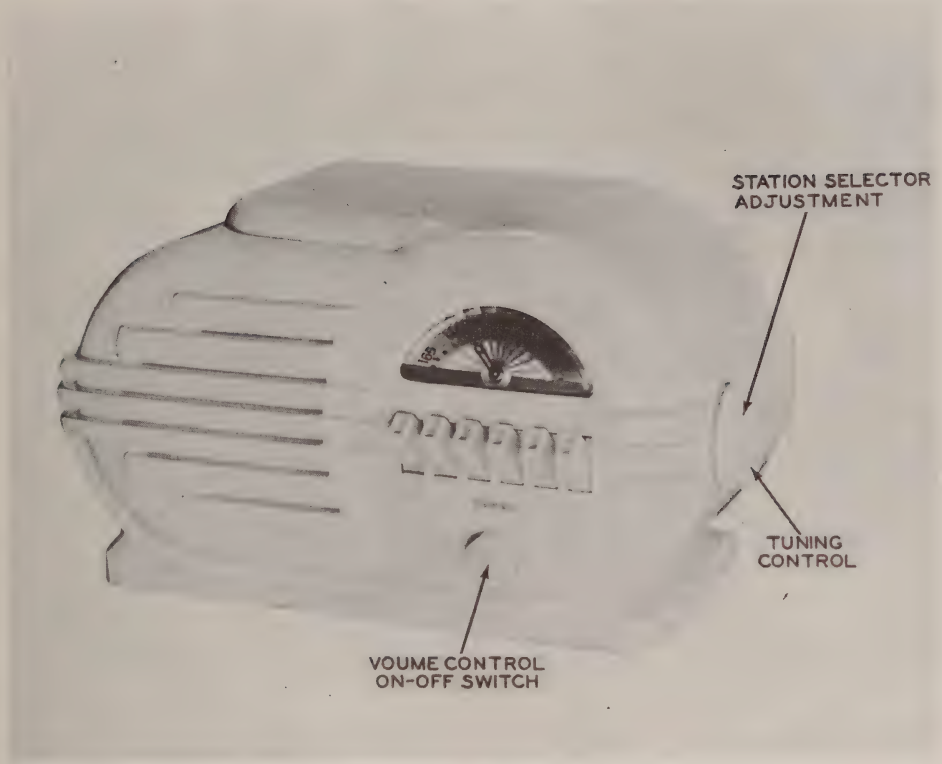
BELMONT
MODEL 6 D 111 SERIES B



BELMONT MODEL 6D111

TRADE NAME	Belmont Model 6D111 Series B
MANUFACTURER	Belmont Radio Corporation, 5921 W. Dickens Ave., Chicago 39, Illinois
TYPE SET	AC - DC Superheterodyne - Self Contained Loop Antenna
TUBES (SIX)	Types 12SK7 RF Amp., 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC-DC Rating .235 Amps. @ 117 Volts AC
TUNING RANGE—BROADCAST	530 to 1650KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to pin #8 (signal grid) of 12SA7. Low side to B-.	455KC	High freq. end of dial. Rotor full open)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator ground lead and receiver B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
"	"	1650KC	"	"	A5	"
	Loop	1400KC	Tune in 1400 KC signal.	"	A6	Adjust for maximum output. Connect output of signal generator to loop of few turns of wire and radiate signal into receiver loop.

Place loop in same position it will be when the chassis is in the cabinet. Volume control at maximum and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: BELMONT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7	12SK7	8N	
2	Converter	12SA7	12SA7	8R	
3	IF Amp.	12SK7	12SK7	8N	
4	Det.-AVC-AF	12SQ7	12SQ7	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BELMONT PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7(A)	40	150	11994	FP306	DY-40-30-20-150	EL-224	AF844D	UP4CJ1	■ Filter
(B)	20	150							▲ "
(C)	20	150							
7(A)	60	150	A-8C-10946		DY-60-40-20-150 M-20-150	EL-340†		UP6CJ44	■ " *
(B)	40	150							▲ "
(C)	40	150				UT-201			"
8	.1	400	1001	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Filter
9	.02	400	10026	TP423	S-4-02	TC-12	484-.02	DT4S2	35L6 Plate Bypass
10	.004	600	100106	TP407	S-6-004	TC-24	684-.004	DT6D4	Audio Coupling
11	.2	400	100110	TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolating
12	.002	600	10025	TP405	S-6-002	TC-22	684-.002	DT6D2	Audio Coupling
13	.05	200	1009	TP428	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
14	.25	200	1008	TP430	S-4-25	TC-2	484-.25	DT4P25	RF Bypass Pwr. Supp.
15	.002	600	10025	TP405	S-6-002	TC-22	684-.002	DT6D2	Ant. Coupling
16	100	500	1295	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	Audio Plate Bypass
17	100	500	129161	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Vol. Cont.
18	100	500	129161*	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Diode
19	100	500	1295	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	Osc. Grid Cond.
20	100	500	1295	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	RF Coupling
21	500	500	1292	MC245	M0.5-35	1FM-35	1468-.0005	5W5T5	RF Grid Coupling

*Used in 25 Cycle Models only.
†Parallel two 40 MFD sections to obtain desired capacity.

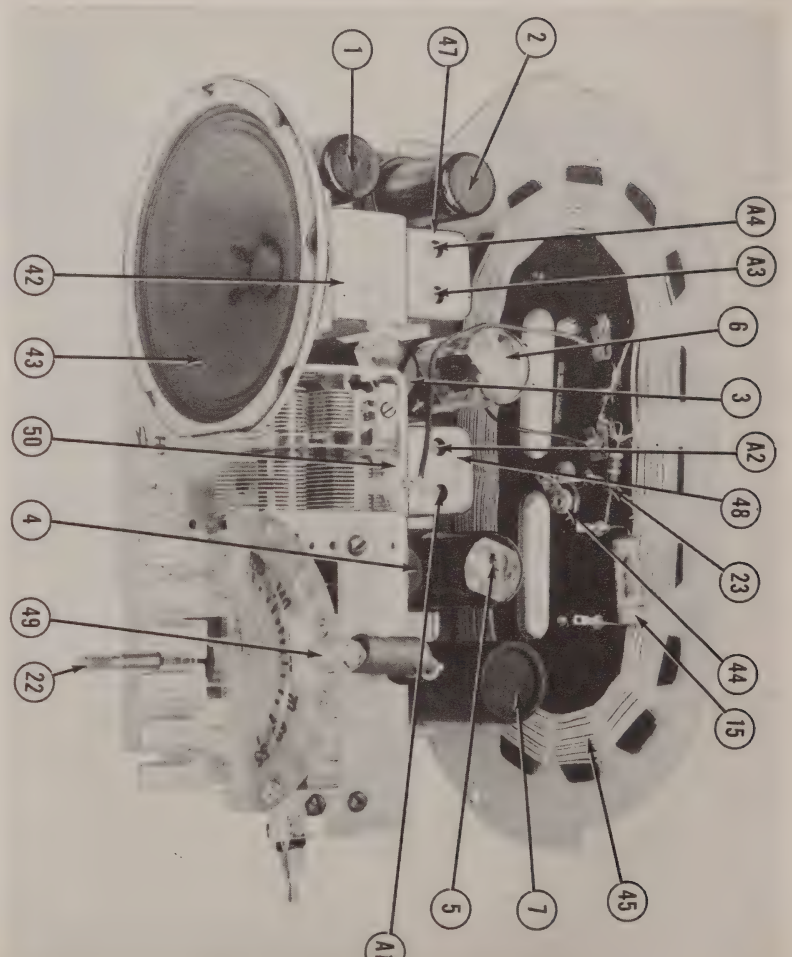
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELMONT PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22(A)	1 Meg.	1	101218	MK402	D13-137	AM-63-2	Volume Control
(B)	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 22A per instructions
(C)	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELMONT PART No.	IRC PART No.	IDENTIFICATION CODES
23	4700Ω	½	A-9B1-70	BTS-4700	Yl.-Vi.-Red Ant. Loading
24	1 Meg.	½	A-9B1-31	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
25	100Ω	2	A-9B1-50	BW-2-100	Br.-Blk.-Br. RF Cathode
26	150KΩ	½	A-9B1-26	BTS-150K	Br.-Grn.-Yl. Line Isolating
27	4700Ω	½	A-9B1-17	BTS-4700	Yl.-Vi.-Red RF Plate Load
28	100KΩ	½	A-9B1-25	BTS-100K	Br.-Blk.-Yl. AVC Network
29	47KΩ	½	A-9B1-23	BTS-47K	Yl.-Vi.-Or. Osc. Grid
30	3.3 Meg.	½	A-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
31	150Ω	2	A-9B1-52	BW-2-150	Br.-Grn.-Br. IF Cathode
32	47KΩ	½	A-9B1-23	BTS-47A	Yl.-Vi.-Or. Diode Load
33	4.7Meg.	½	A-9B1-35	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
34	220KΩ	½	A-9B1-27	BTS-220K	Red-Red-Yl. 1st AF Plate Load
35	15Ω	2	A-9B1-52	BW-2-150	Br.-Grn.-Br. Output Cathode
36	470KΩ	½	A-9B1-29	BTS-470K	Yl.-Vi.-Yl. Output Grid
37	200Ω	1	A-9B2-53	BW-1-180	Red-Blk.-Br. Filter
38	1200Ω	1	A-9B2-63	BW-1-1200	Br.-Red-Red Filter
39	22Ω	½	A-9B1-42	BW-2-22	Red-Red-Blk. Rectifier Ballast
40	30Ω	1	C-9B2-44	BW-1-33	Or.-Blk.-Blk. Line Dropping

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BELMONT PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
41	3150Ω	3Ω	275Ω	.58Ω	105104	A-3576‡	T-13842‡		‡Requires one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	BELMONT PART No.	JENSEN PART No.		
42	PM	3Ω	114197	ST-107#		#Cut speaker lip the same as the original speaker.
43	CONE DIA.	VC DIA.	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			
	44-13/16"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	BELMONT PART No.	MEISSNER PART No.	
44	Loading Coil	14.5Ω		12310		
45	Loop Ant.	.1Ω	1.5Ω	B-13E-10242		
46	Osc. Coil	1.2Ω	4Ω	A-13D-10215		
47	Input IF	32.5Ω	32.5Ω	106140HR	16-6658	
48	Output IF	25Ω	24Ω	106145R	16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					BELMONT PART No.		
49	Bayonet	6-8	0.15	Brown	107249		#47

MISCELLANEOUS

ITEM No.	PART NAME	BELMONT PART No.	NOTES
50	Tuning Cap.	B-2A-10211	Two Gang Tuning Capacitor
	Cabinet	128473-9	Bakelite
	Knob	128496-8	Volume
	Dial Lever	115361	Lever with roller
	Spring	120283	Lever Return Spring

PUSHBUTTON ADJUSTMENTS

The pushbuttons may be used, after proper adjustment, for the automatic tuning of any six selected stations. They may be set up in any order.

1 - Turn on the radio and allow it to warm up.

2 - Select call letters of the six desired stations from the call letter sheets supplied with the receiver.

3 - Insert one call-letter tab in each of the pushbuttons. Press in acetate tab over each call-letter.

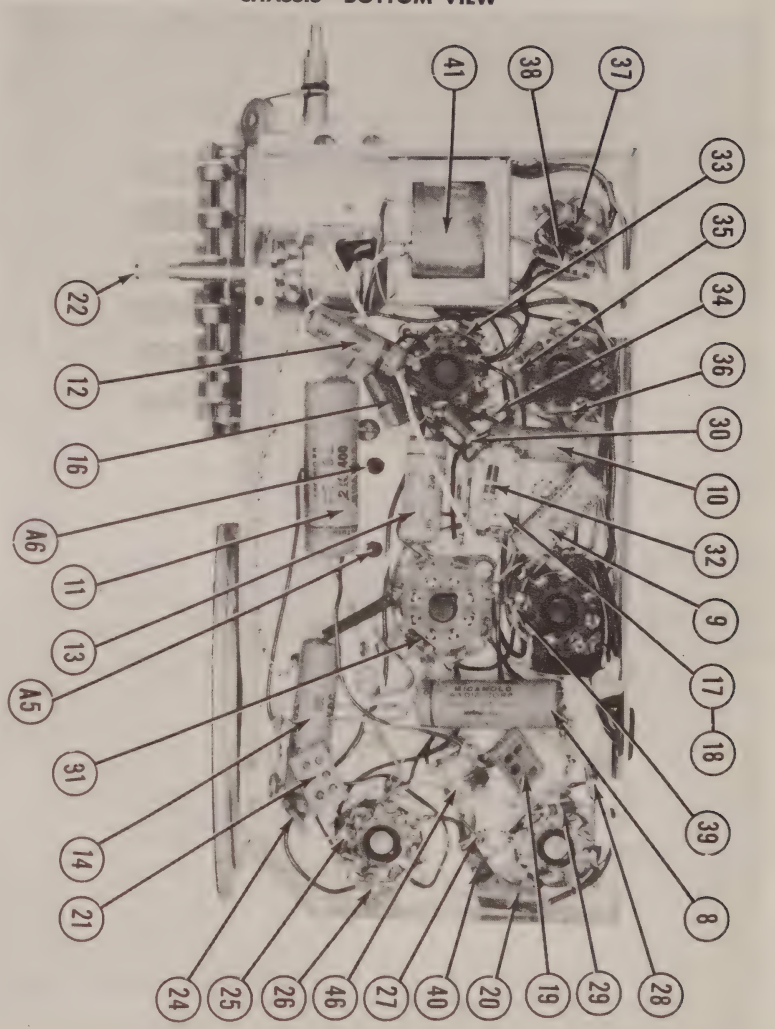
4 - Loosen locking screw in the center of the tuning knob by turning it counterclockwise.

5 - Press the first pushbutton down all the way. Hold down firmly and carefully tune in the station whose call-letters are on the pushbutton. Release the pushbutton.

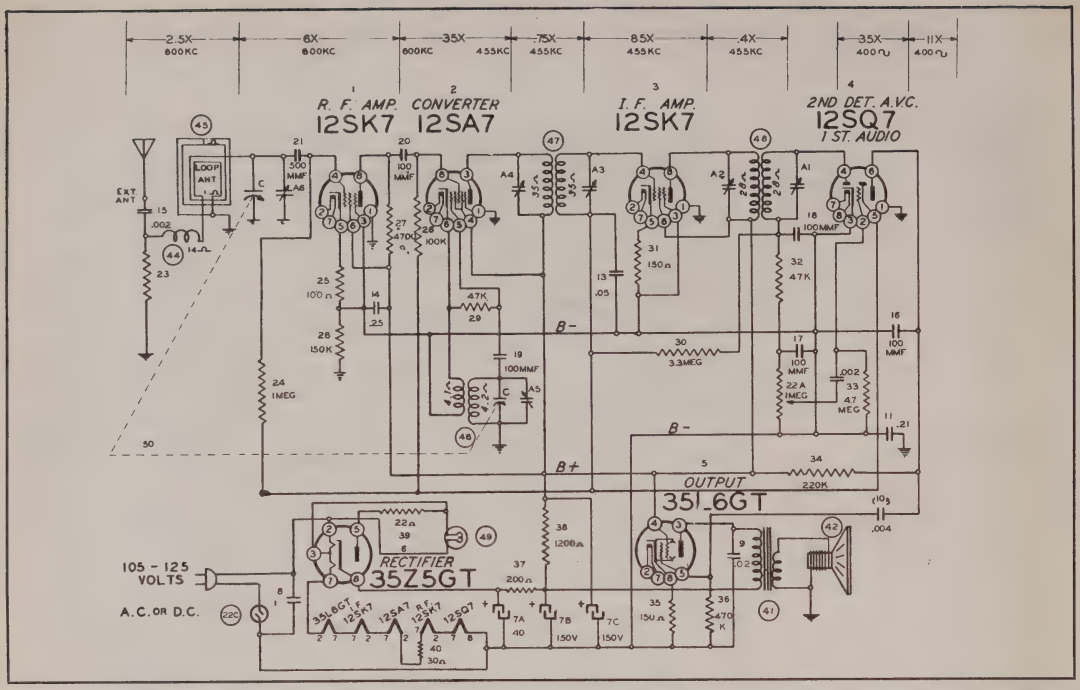
6 - Follow the same proceedure for the other five pushbuttons, adjusting each to a different station as appears on each pushbutton.

7 - Rotate tuning knob on the side of the cabinet as far to the right as it will go. Tighten the locking screw firmly in the center of the tuning knob.

CHASSIS—BOTTOM VIEW

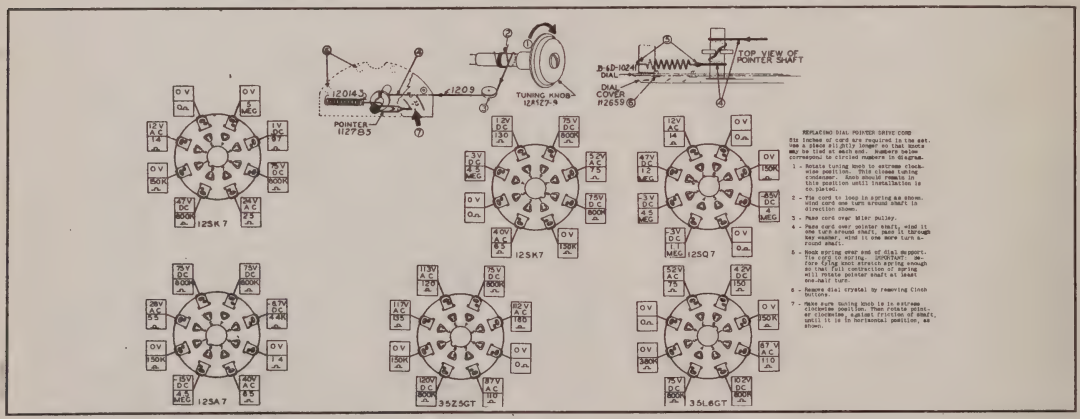


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for average operative stages, rather than absolute values. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3 volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1. DC voltage measurements are at 20,000 ohms per volt; AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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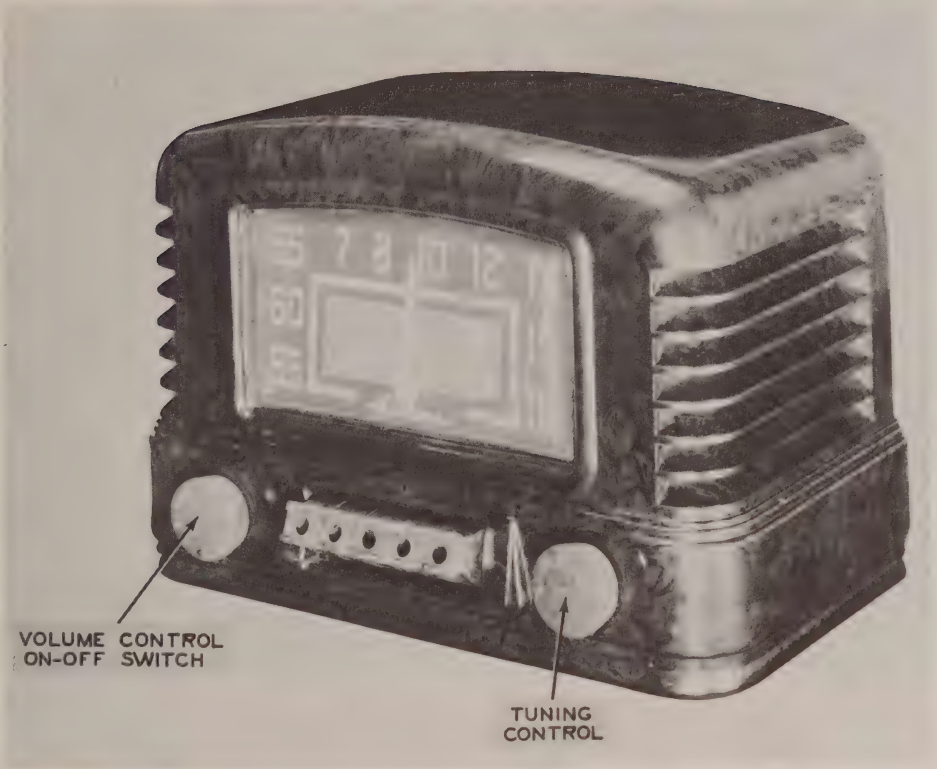
AIRLINE
MODELS 54 BR-1505 A, B;
54 BR-1506 A, B.



AIRLINE
MODELS 54 BR-1505 A, B;
54 BR-1506 A, B.

AIRLINE MODEL 54BR-1505B

TRADE NAME	Airline Models 54BR-1505A,B; 54BR-1506A,B.
MANUFACTURER	Montgomery Ward and Co., 619 Chicago Ave., Chicago, Illinois
TYPE SET	AC-DC Superheterodyne - Self-Contained Loop Antenna
TUBES (FIVE)	Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC-DC Rating .240 Amps. @ 117 Volts AC
TUNING RANGE—BROADCAST	535 to 1600KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1 MFD	High side to pin #4 (grid) of 12SK7. Low side to B-.	455KC	Rotor full open. (Plates out of mesh)	Across voice coil	A1,A2,	Adjust for maximum output. Use isolation transformer if available. If not, isolating capacitor must be connected between generator grnd. lead and receiver B-. Also decrease dummy ant. to .001 MFD to prevent excessive hum modulation.
"	High side to pin #8 (grid) of 12SA7. Low side to B-.	"	"	"	A3,A4.	"
200 MMFD	"	1600KC	"	"	A5	Adjust for maximum output. Use isolation transformer or .1 MFD isolating capacitor.
"	High side to ext. antenna. Low side to B-.	1400KC	Tune in 1400 KC signal.	"	A6	"

Receiver loop connected and in proper position. Volume control at maximum volume and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6(A)	40	150	BE11992	FP3061†	DY-40+20-150	EL-24	AF84D20A1†	UP4CJ591†	■ Filter
(B)	20	150							▲ "
6(A)	60	150	BE11993	FP357#	DY-80+40-150	EL-26			● Filter*
(B)	40	150							▲ "
7	.1	400	BE1001	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Filter
8	.02	400	BE10026	TP423	S-4-02	TC-12	484-.02	DT4S2	50L6 Plate Bypass
9	.004	600	BE100106	TP407	S-6-004	TC-24	684-.004	DT6D4	Audio Coupling
10	.002	600	BE10025	TP405	S-6-002	TC-22	684-.002	DT6D2	" "
11	.05	200	BE1009	TP426	S-4-05	TC-15	484-.05	DT4S5	AVC Filter
12	.05	200	BE1009	TP426	S-4-05	TC-15	484-.05	DT4S5	RF Bypass Pwr. Supp.
13	.2	400	BE100110	TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolating
14(A)	.002	600	BE6D10778	TP405	S-6-002	TC-22	684-.002	DT6D2	Ant. Coupling
(B)	.01	600		TP421	S-6-01	TC-11	684-.01	DT4S1	" " †
15	250	500	BE12912	MC240	M0.5-325	1FM-325	1468-.00025	5W5T25	Audio Plate Bypass
16	100	500	BE1295	MC235	M0.5-31	1FM-31	1468-.0001	5W5T1	RF Bypass Diode
17	200	500	BE12921	MC237	M0.5-32	1FM-32	1468-.0002	5W5T2	Osc. Grid Cond.

*Used on 25 Cycle Models.
†Used on Later Models.
††Do not Connect Bypass Section
#Parallel Two Sections.

Note - No Ant. Coupling Used on Series A Models.

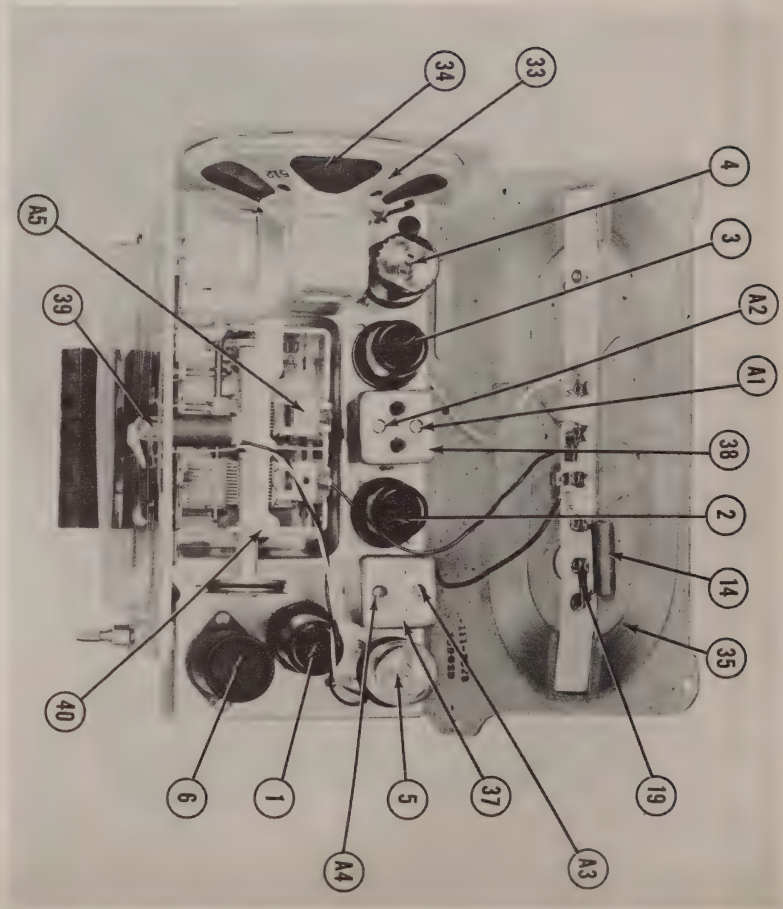
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
18(A)	1 Meg.	1	BE101265	MK402	D13-137	AM-63-Z	Volume Control
(B)	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 18A per instructions
(C)	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
19	1000Ω	½	BEA-9B1-13	BTS-1000	Br.-Blk.-Red Ant. Loading
20	47KΩ	½	BEA-9B1-82	BTS-47K	Yl.-Vi.-Or. Osc. Grid
21	220KΩ	½	BEA-9B1-27	BTS-220K	Red-Red-Yl. Line Isolating
22	47Ω	½	BEA-9B1-46	BW-½-47	Yl.-Vi.-Br. IF Cathode
23	3.3 Meg.	½	BEA-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
24	4.7 Meg.	½	BEA-9B1-35	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
25	47KΩ	½	BEA-9B1-23	BTS-47K	Yl.-Vi.-Or. Series Grid
26	470KΩ	½	BEA-9B1-29	BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
27	680KΩ	½	BEA-9B1-30	BTS-680K	Blue-Gray-Yl. Output Grid
28	150Ω	½	BEA-9B1-52	BW-½-150	Br.-Grn.-Br. Output Cathode
29	1200Ω	1	BEA-9B2-63	BTA-1200	Br.-Red-Red-Filter
30	22	½	BEA-9B1-42	BW-½-22	Red-Red-Blk. Rectifier Ballast
31	33	1	BEA-9B2-4	BW-1-33	Or.-Or.-Blk. Line Dropping

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
32	2500Ω	3.2Ω	194Ω	.47Ω	105108D	A-3876	T-13342**		**Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRLINE PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
33	PM	3.2Ω	114-248C	ST-1051	‡	‡Improvise Mounting Bracket.
	CONE DIA.	VC DIA.				
34	4-7/16"	1/2"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	AIRLINE PART No.	MEISSNER PART No.	
35	Loop Ant.	0Ω	1.2Ω	BE111252B		
36	Osc. Coil.	1Ω	4.5Ω	BE110145	14-1040	
37	Input IF	37Ω	38Ω	BE108140K	13-6656	
38	Output IF	35Ω	35Ω	BE108141F	16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					AIRLINE PART No.		
39	Bayonet	6-8	0.15	Brown	BE107249		#47

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
40	Tuning Cap.	BEB-8A-10209	Two Gang Variable Capacitor
	Cabinet	BE128655-46	Walnut Bakelite
	"	BE128655-9	Ivory Bakelite
	Plate	BE112945B	Dial
	Scale	BEB-6D-10117	Dial-Dark Brown
	"	BEB-6D-10117-1	Dial-Light Brown
	Pointer	BEB-26-10118	Dial
	Crystal	BE112969	"
	Knob	BE128686-17	"Volume" Walnut for "B" Series
	"	BE128686-47	" " " "A" "
	"	BE128686-8	" Ivory
	"	BE128687-17	"Tuning" Walnut for "B" Series
	"	BE128687-47	" " " "A" "
	"	BE128687-8	" Ivory

PUSHBUTTON ADJUSTMENTS

The pushbuttons may be used, after adjustment, for the automatic tuning of any five selected stations. They may be set up in any order:

1 - Turn on radio and allow at least one minute for warm up.

2 - Insert the long thin screwdriver (supplied with set) into the hole in one of the pushbuttons and turn the locking screw several turns to the left.

3 - With screwdriver still engaged in locking screw slot, push the screw all the way in. Hold it in this position and with tuning knob tune in the station you want.

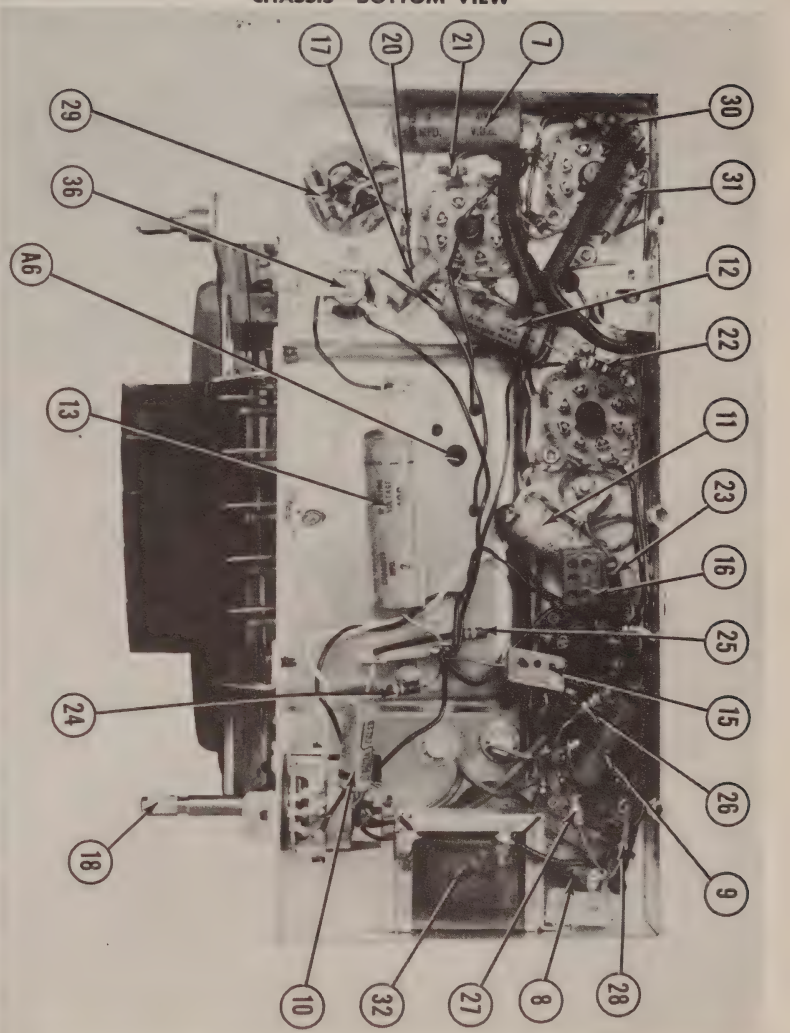
4 - Turn the pushbutton locking screw to the right locking it firmly. Remove screwdriver.

5 - Press pushbutton all the way in and rotate tuning dial back and forth to determine if pushbutton is properly set. If not, repeat the procedure.

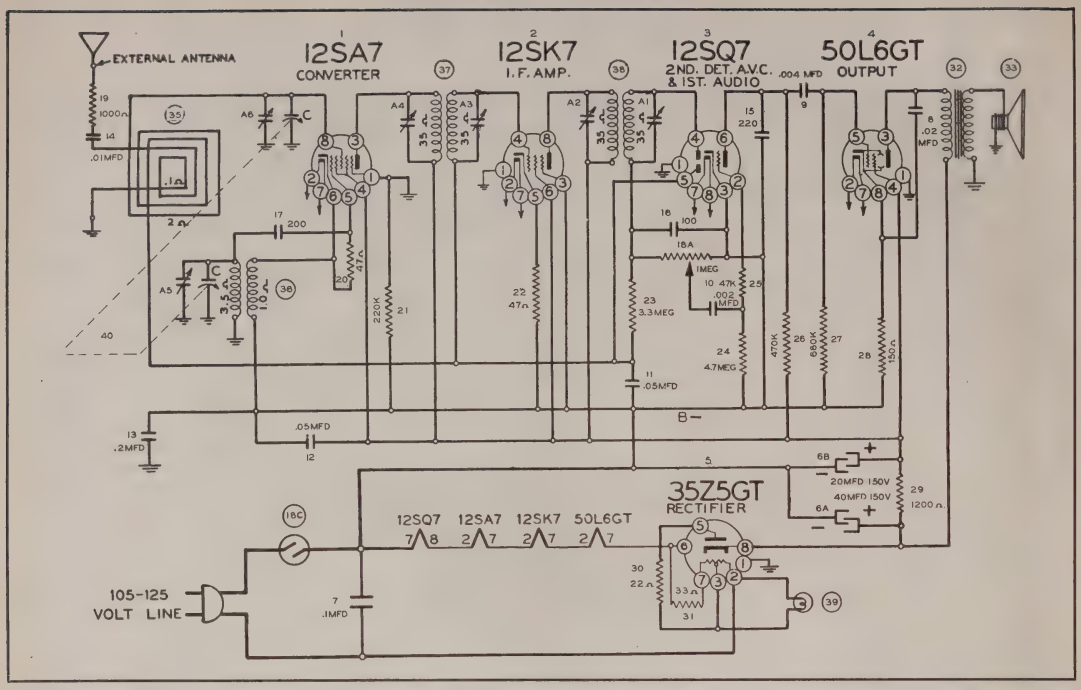
6 - Press out call letters for the station from call letter sheet supplied with set and insert in button. Put celluloid tab over letters.

7 - Set the remaining pushbuttons following the same procedure.

CHASSIS—BOTTOM VIEW

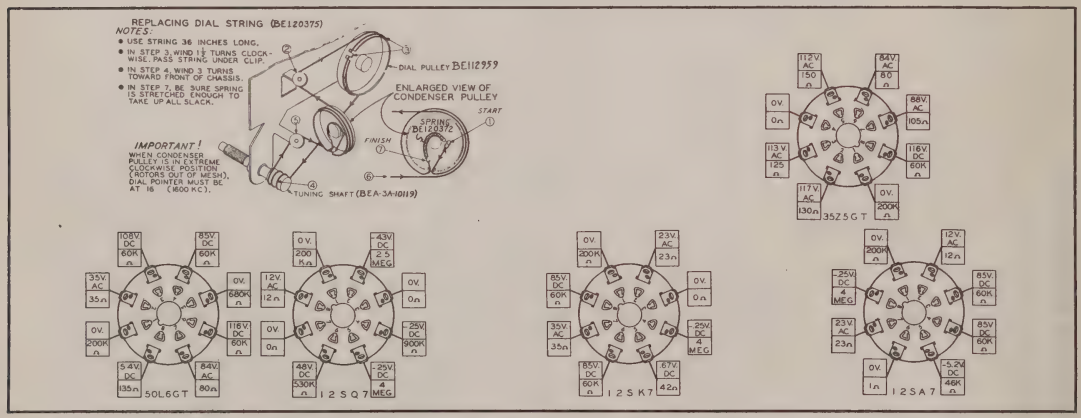


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for average operative stages, rather than absolute values. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3 volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1. DC voltage measurements are at 20,000 ohms per volt; AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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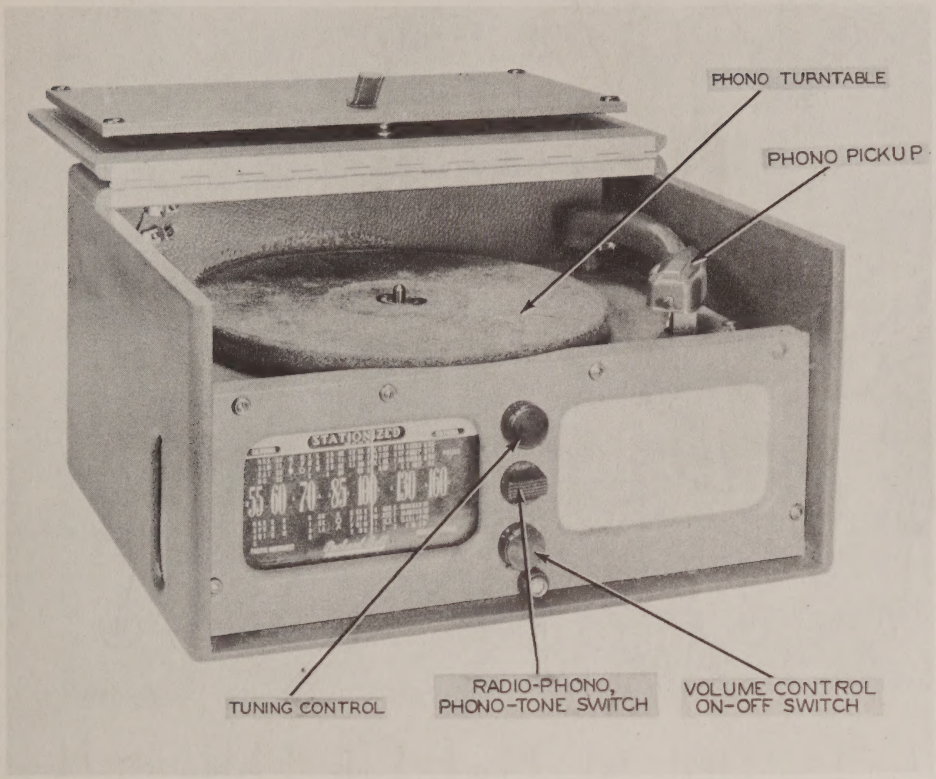


PACKARD-BELL MODEL 561

TRADE NAME	Packard-Bell Model 561
MANUFACTURER	Packard-Bell Co., 3443 Wilshire Blvd., Los Angeles, Calif.
TYPE SET	AC Combination Superhet. Radio - Record Player - Self Contained Loop Antenna
TUBES (FIVE)	Types 6SA7 Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC-1AF, 6K6GT Power Output, 6X5GT/G Rectifier
POWER SUPPLY	110-120 Volts AC Rating .325 Amp. @ 117 Volts AC
TUNING RANGE--BROADCAST	540-1750KC SHORT WAVE

ALIGNMENT INSTRUCTIONS

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.01 MFD	High side to pin #8 (signal grid) of 6SA7. Low side to chassis.	455KC	540KC	Across voice coil.	A1,A2, A3,A4.	Adjust for maximum output.
	Loop See Note A	1750KC	1750KC	"	A5	" " " "
	"	1300KC	1300KC	"	A6	" " " "
	"	570KC	570KC	"	Loop	Adjust loose wire on loop for maximum output.
						Note A-Connect output of signal generator to loop of few turns of wire and radiate signal into receiver loop by spacing. No direct connection

Volume control at maximum and output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	REPLACEMENT DATA: PACKARD-BELL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	6SA7	6SA7	8R	
2	IF Amp.	6SK7	6SK7	8N	
3	Det.-AVC-1AF	6SQ7	6SQ7	8Q	
4	Power Output	6K6GT	6K6GT	7S	
5	Rectifier	6X5GT/G	6X5GT/G	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PACKARD-BELL PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6	40	350	24011	TC78	M-40-450	UT203(2)	PRS450-40	BR4035	Filter
7	20	350	24012	TC65	M-20-450	UT-203	PRS450-20	BR2035	"
8	.005	600	23004	TP408	S-6-005	TC-25	684-.005	DT6D5	6K6 Plate Bypass
9	.02	600	23007	TP412	S-6-02	TC-12	684-.02	DT6S2	Audio Coupling
10	.001	600	23001	TP404	S-3-001	TC-21	684-.001	DT6D1	Audio Plate Bypass
11	.005	600	23004	TP408	S-6-005	TC-25	684-.005	DT6D5	Audio Coupling
12	.05	600	23009	TP415	S-6-05	TC-15	684-.05	DT6S5	AVC Filter
13	.05	600	23009	TP415	S-6-05	TC-15	684-.05	DT6S5	Screen Bypass
14	470	500	23229	MC245	M0.5-35	1FM-35	1468-.0005	SW5T5	Tone Compensation
15	47	500	23225	MC225	M0.5-45	1FM-45	1468-.00005	SW5Q5	Osc. Grid Cond.

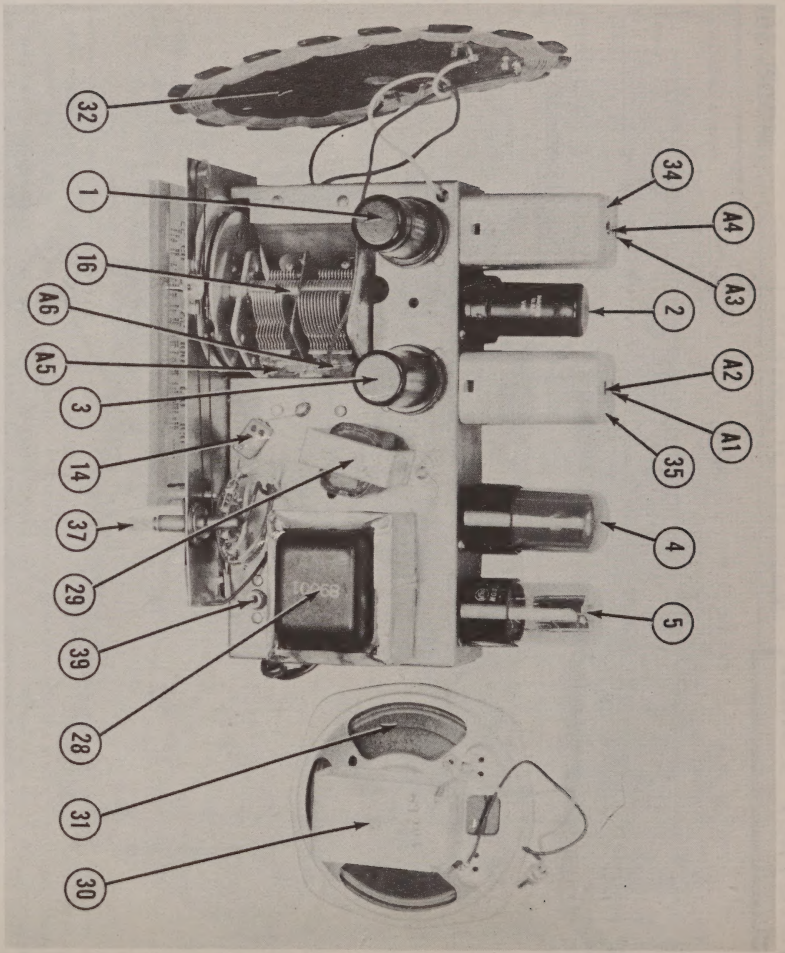
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PACKARD-BELL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17(A)	500KΩ	1	25011	MR48	D13-133	M-60-Z	Volume Control
(B)	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 17A per instructions.
(C)	Switch		" "	M26 "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PACKARD-BELL PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
18	22KΩ	½	73041	BTS-22K	Red-Red-Or. Osc. Grid
19	47Ω	½	73009	BW-2-47	Yl.-Vi.-Blk. IF Cathode
20	1 Meg.	½	73053	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
21	4.7 Meg.	½	73057	BTS-4.7 Meg.	Yl.-Vi.-Grn. 1st AF Grid
22	220KΩ	½	73049	BTS-220K	Red-Red-Yl. " " Plate Load
23	470KΩ	½	73051	BTS-470K	Yl.-Vi.-Yl. Output Grid
24	4.7 Meg.	½	73057	BTS-4.7 Meg.	Yl.-Vi.-Grn. Phono Load
25	4700Ω	1	73075	BTA-4700	Yl.-Vi.-Red Screen Dropping
26	180Ω	1	73077	BW-1-180	Br.-Gray-Br. Output Bias
27	1000Ω	1	73071	BW-1-1000	Br.-Blk.-Red Filter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	PACKARD-BELL PART No.	STANCOR PART No.	THORDARSON PART No.	
28	117VAC @ .325A	430V.CT @ .06A	6V. @ 2.08A		89001	P-6120#	T-13R20#	#Drill new mounting holes and enlarge the cut-out for the shell.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PACKARD-BELL PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
29	44002	3.2Ω	600Ω	.56Ω	89401	A-3876	T-13539		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			PACKARD-BELL PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
30	PM	3.2Ω	83202	ST-113		
	CONE DIA.	VC DIA.				
31	4-5/16"	⅜"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	PACKARD-BELL PART No.	MEISSNER PART No.	
32	Loop Ant.	.1Ω	2Ω	29309A		
33	Osc. Coil		7.2Ω	29202A		
34	Input IF	19.7Ω	19Ω	29004	16-6658	
35	Output IF	22Ω	22Ω	9007A	16-6670	

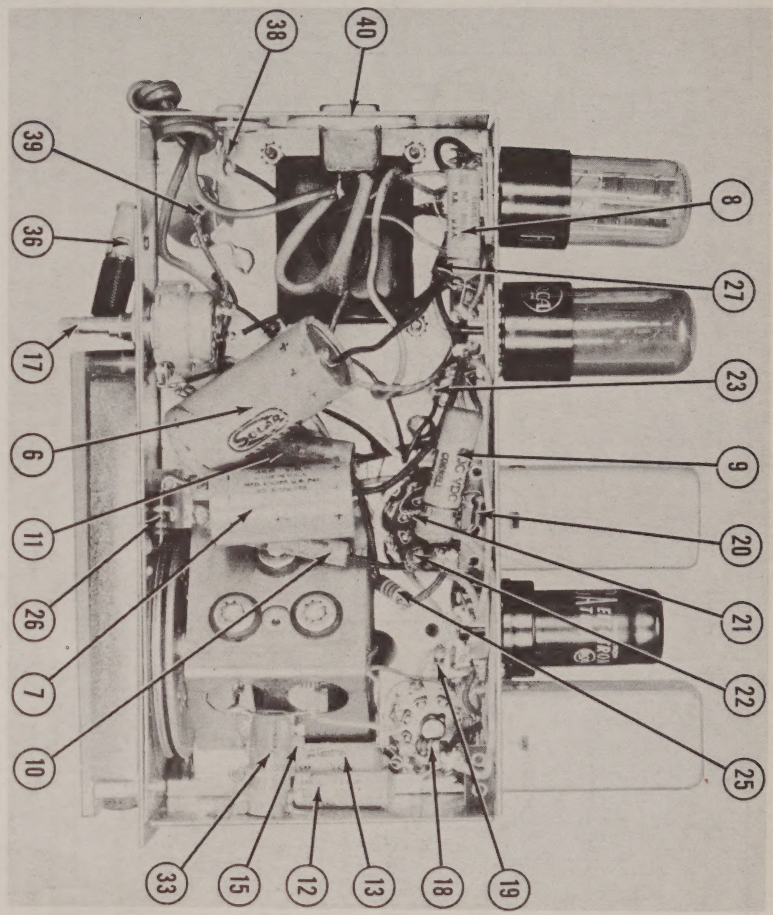
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					PACKARD-BELL PART No.		
36	Bayonet	6-8	0.25	Blue	79010B		#44

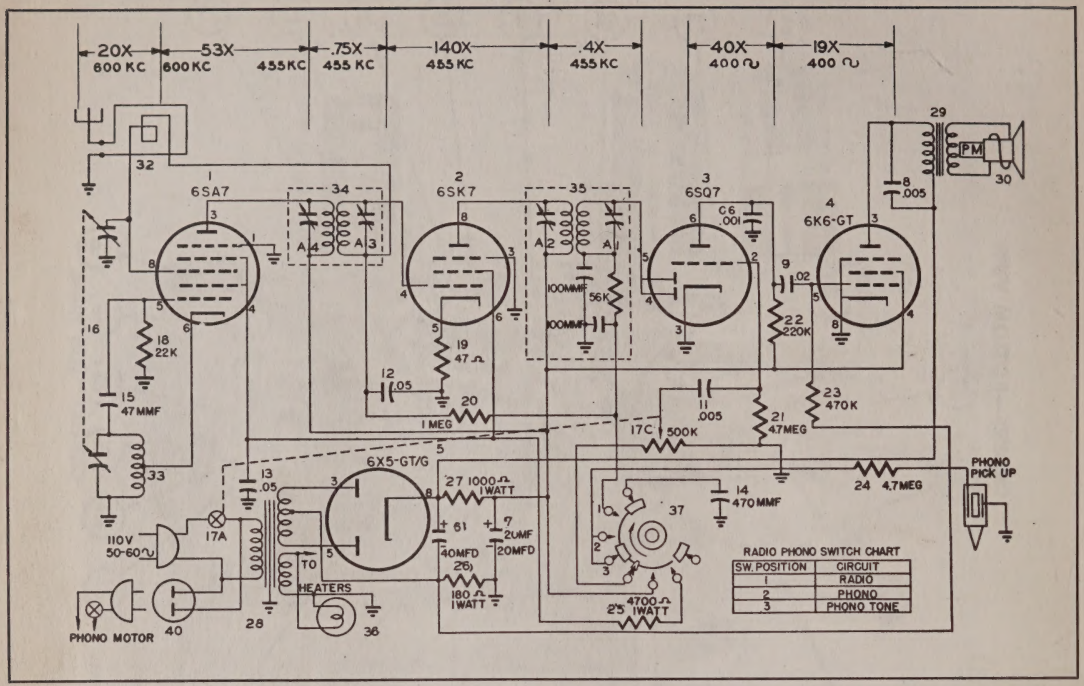
MISCELLANEOUS

ITEM No.	PART NAME	PACKARD-BELL PART No.	NOTES
16	Tuning Cap.	23508B	2 Gang Variable with Pulley
37	Switch	86006B	Radio-Phono
38	Plug		Speaker
39	"	66004	Phono Pickup
40	"		Phono Motor
	Switch	86701	
	Dial Scale	39023A	
	Dial Plate	65007B	
	Pointer Slide	67004	
	Pointer Wire	67007	
	Knob, Plastic	52014	Volume Control, Tuning
	" "	52001A	Phono-Radio Switch
	Crystal	63012	Cartridge (P-87)

CHASSIS—BOTTOM VIEW

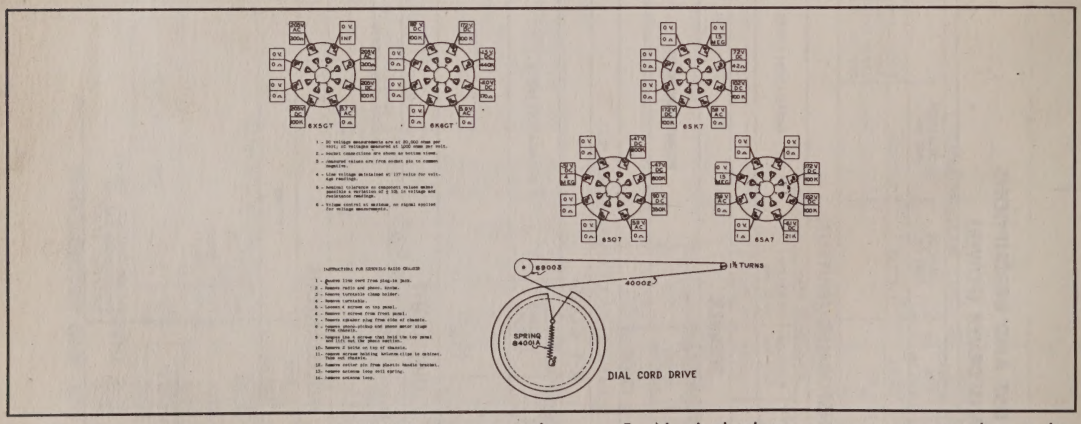


SCHEMATIC DIAGRAM



The stage gain measured values listed above are approximate values for average operative stages, rather than absolute values. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3 volt battery bias substituted for measurement.

VOLTAGE AND RESISTANCE ANALYSIS CHART



1. DC voltage measurements are at 20,000 ohms per volt; AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HOWARD W. SAMS & CO., INC.

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